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**SMITHSONIAN INSTITUTION
ASTROPHYSICAL OBSERVATORY**

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Number 141

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No. E-3

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J. G. Izsak

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SAO Special Report No. 141

SATELLITE ORBITAL DATA

No. E-3

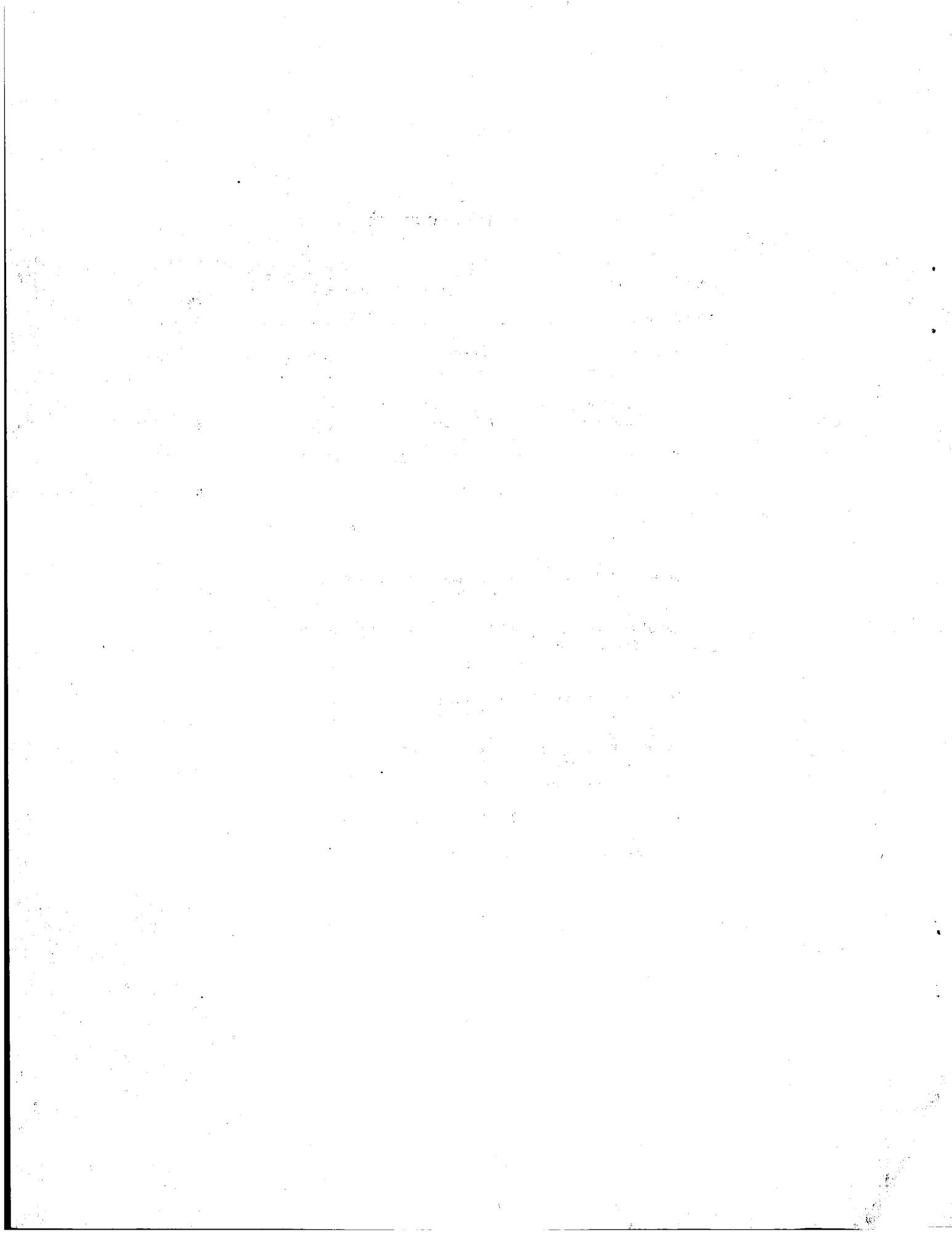
**Material prepared under the supervision of I. G. Izsak,
Chief, Research and Analysis Division**

**Smithsonian Institution
Astrophysical Observatory**

Cambridge, Massachusetts 02138

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ORBITAL INFORMATION¹

The orbital elements have been derived by the indicated staff members of the Satellite Tracking Program, Smithsonian Astrophysical Observatory, employing the SAO Differential Orbit Improvement Program (DOI).

As opposed to osculating elements, the elements presented here are mean elements in the sense that the effects of the short-period perturbations due to the earth's oblateness have been eliminated.

SAO mean elements have been derived from observations covering several days, and are given in the form of a table. The successive sets of elements are essentially independent of each other. They are dependent, however, in the sense that high-order coefficients in the secular and the long-periodic terms are generally considered as known and as constant for periods of several weeks or months, as dictated by convenience.

The times of epoch in the mean elements are reckoned in Julian Days, but for the sake of convenience the number 2400000.5 has been subtracted to provide an abbreviated notation which we call "Modified Julian Days," or "MJD."

The units of the orbital elements are degrees for angular quantities, megameters ($Mm = 10^6$ meters) for linear quantities, and revolutions for the mean anomaly M and its derivatives.

The tabulated values of the SAO mean elements give the values of arguments of perigee ω ; right ascension of the ascending node Ω ; inclination i ; eccentricity e ; and mean anomaly M as functions of time $t = T - T_0$ (where T_0 is the reference epoch) expressed in days. The two-digit number placed at the right of each value represents the standard error for that element and refers to the last digits given.

The same tabulation also gives the mean (anomalous) motion n ; the orbital acceleration $n^2/2$ or n^3 (dn/dt); and the semimajor axis a or the geocentric distance of perigee q (in megameters). Of the last three columns, the one headed N indicates the number of observations used for the computation of a set of elements; the one headed D , the number of days used; and the one headed O , the standard error of the approximate value of the observation relative to their assumed accuracy.

~~The same tabulations also give the values of the orbital elements derived from observations covering about two weeks. They are given in the form of mean elements plus both secular and periodic terms. The general expression for one element is~~

$$E = E_0 + E_1 t + E_2 t^2 + \dots + A_1 \sin(\theta_1 + C_1 t),$$

where $t = T - T_0$ is again expressed in days. The presence of a standard error associated with a particular coefficient indicates that this quantity was determined by the process of differential orbit improvement; the absence of a standard error means that the quantity was taken from some other source.

¹This work was supported by grant NsG 87-60 from the National Aeronautics and Space Administration.

In our computer program, the inclination and the argument of perigee are referred to the true equator of date; the right ascension of the ascending node, however, is reckoned from the mean equinox of 1950.0 along the corresponding mean equator to the intersection with the moving true equator of date, and then along the true equator of date. To transform from right ascension of the node as determined by the DOI to right ascension of the node referred to the mean equinox of date, one uses

$$\Omega^{\circ} = \Omega^{\circ}(\text{DOI}) + 3.508 \times 10^{-5} (\text{MJD} - 33281) ,$$

where MJD stands for the Modified Julian Day of the date.

The mean (anomalistic) motion n can be obtained from the smoothed elements by differentiating the expression for M , and the orbital acceleration n' can be obtained by twice differentiating the same expression for M .

Satellite 1959 Alpha 1

SAO MEAN ELEMENTS

2 January - 27 February 1962

| T (MD) | w | Q | I | M | n | n' | /2 | q | N | D | σ |
|-----------|-------------|-------------|--------------|-------------|------------|--------------|-------------|-------------|---|------|---|
| 37666.0 | 276.2461 06 | 96.0117 04 | -0.00002 03 | 0.000000 05 | .931793 02 | 11.476959 01 | *5829E-5 73 | 6.939420 58 | 8 | 2.83 | |
| 37668.0 | 286.8492 06 | 89.8853 04 | -0.000000 05 | 0.000000 03 | .885739 01 | 11.476984 00 | *4929E-5 82 | 6.939392 54 | 8 | 2.17 | |
| 37670.0 | 297.4500 10 | 82.1133 05 | -0.000000 02 | 0.000001 06 | .839729 02 | 11.477003 01 | *410E-5 13 | 6.939249 50 | 8 | 2.41 | |
| 37672.0 | 308.0466 19 | 74.7500 05 | -0.000000 03 | 0.000004 10 | .793761 05 | 11.477026 03 | *396E-5 17 | 6.936802 42 | 8 | 2.40 | |
| 37674.0 | 318.663 12 | 66.7348 11 | -0.000000 02 | 0.000000 05 | .747742 48 | 11.477015 16 | *427E-5 15 | 6.937912 40 | 8 | 2.09 | |
| 37676.0 | 329.2698 87 | 61.3138 12 | -0.000000 06 | 0.000022 19 | .701798 36 | 11.476983 14 | *353E-5 13 | 6.937372 37 | 8 | 1.44 | |
| 37678.0 | 339.8853 96 | 54.6673 13 | -0.000000 04 | 0.000036 28 | .655846 42 | 11.477064 18 | *420E-5 15 | 6.936224 37 | 8 | 1.61 | |
| 37680.0 | 350.4652 87 | 47.4337 13 | -0.000000 05 | 0.000019 24 | .610066 36 | 11.477150 12 | *354E-5 12 | 6.935724 33 | 8 | 1.78 | |
| 37682.0 | 1.0209 43 | 40.3211 13 | -0.000000 07 | 0.000054 17 | .564420 18 | 11.477160 19 | *317E-5 23 | 6.935431 35 | 8 | 2.56 | |
| 37684.0 | 11.604 12 | 39.5986 11 | -0.000000 01 | 0.000041 39 | .518649 50 | 11.477069 47 | *302E-5 29 | 6.933917 25 | 8 | 2.66 | |
| 37686.0 | 22.1571 21 | 26.5137 09 | -0.000000 16 | 0.000002 13 | .473042 08 | 11.477172 02 | *462E-5 43 | 6.934193 22 | 8 | 3.32 | |
| 37688.0 | 32.7168 23 | 19.4822 08 | -0.000000 20 | 0.000000 13 | .427432 06 | 11.477184 04 | *454E-5 45 | 6.933625 20 | 8 | 3.37 | |
| 37690.0 | 43.2811 21 | 12.4455 11 | -0.000000 14 | 0.000074 05 | .381830 04 | 11.477215 03 | *508E-5 25 | 6.933024 16 | 8 | 3.54 | |
| 37692.0 | 53.8402 15 | 5.4050 08 | -0.000000 24 | 0.000000 14 | .336285 03 | 11.477240 01 | *475E-5 14 | 6.932409 29 | 8 | 3.27 | |
| 37694.0 | 64.3979 14 | 358.3860 03 | -0.000000 03 | 0.000000 03 | .290784 03 | 11.477255 01 | *4045E-5 71 | 6.931966 31 | 8 | 2.95 | |
| 37696.0 | 74.9538 12 | 351.3249 06 | -0.000000 06 | 0.000000 03 | .245317 02 | 11.477279 01 | *385E-5 15 | 6.931718 36 | 8 | 2.71 | |
| 37698.0 | 85.5040 13 | 344.3294 09 | -0.000000 09 | 0.000000 04 | .199892 03 | 11.477295 01 | *327E-5 13 | 6.931584 46 | 8 | 3.12 | |
| 37700.0 | 96.0529 16 | 337.2478 09 | -0.000000 03 | 0.000000 03 | .154503 03 | 11.477315 01 | *348E-5 11 | 6.931648 38 | 8 | 2.63 | |
| 37702.0 | 106.5919 20 | 330.2114 11 | -0.000000 05 | 0.000000 04 | .109156 03 | 11.477331 02 | *3793E-5 77 | 6.931747 40 | 8 | 2.95 | |
| 37704.0 | 117.1415 18 | 323.1713 09 | -0.000000 07 | 0.000000 04 | .063823 04 | 11.477341 02 | *274E-5 20 | 6.932112 48 | 8 | 3.50 | |
| 37706.0 | 127.6973 22 | 316.3111 12 | -0.000000 02 | 0.000000 04 | .018494 05 | 11.477338 02 | *1951E-5 98 | 6.932614 46 | 8 | 4.71 | |
| 37708.0 | 138.2532 12 | 309.0934 06 | -0.000000 01 | 0.000000 01 | .973171 03 | 11.477334 01 | *3217E-5 92 | 6.933102 55 | 8 | 2.84 | |
| 37710.0 | 148.8207 13 | 302.0343 07 | -0.000000 07 | 0.000000 01 | .927847 03 | 11.477341 02 | *3233E-5 74 | 6.933736 52 | 8 | 3.00 | |
| 37712.0 | 159.3923 11 | 295.0749 03 | -0.000000 01 | 0.000000 02 | .882534 02 | 11.477348 01 | *3231E-5 68 | 6.934470 49 | 8 | 2.94 | |
| 37714.0 | 169.9696 19 | 287.9792 06 | -0.000000 02 | 0.000000 03 | .837232 04 | 11.477355 02 | *365E-5 11 | 6.935259 47 | 8 | 3.99 | |
| 37716.0 | 180.5504 26 | 280.9468 03 | -0.000000 03 | 0.000000 04 | .791951 06 | 11.477364 03 | *392E-5 13 | 6.936054 35 | 8 | 3.81 | |
| 37718.0 | 191.1340 20 | 273.9337 07 | -0.000000 03 | 0.000000 04 | .746695 05 | 11.477378 02 | *399E-5 12 | 6.936815 36 | 8 | 3.16 | |
| 37720.0 | 201.7229 09 | 266.8627 04 | -0.000000 02 | 0.000000 03 | .701453 02 | 11.477384 01 | *4239E-5 59 | 6.937525 24 | 8 | 1.11 | |
| 37722.0 | 212.3220 21 | 259.8920 31 | -0.000000 03 | 0.000000 06 | .656204 04 | 11.477385 02 | *452E-5 18 | 6.937945 29 | 8 | 3.15 | |

| T (MD) | w | Ω | 1 | e | M | n | $n'/2$ | q | N | D | σ |
|-----------|----------|-----------------|------------|------------|------------|--------------|--------------|-----------|----|---|----------|
| 37724.0 | 222.9157 | 10 252.70877 04 | 32.8812 02 | .164095 05 | .611013 03 | 11.477402 01 | .4549E-5 75 | 6.9388313 | 34 | 8 | 1.85 |
| 37726.0 | 233.5271 | 12 245.7485 04 | 32.8819 03 | .164049 03 | .565818 03 | 11.477419 02 | .3765E-5 .93 | 6.9388683 | 46 | 8 | 2.97 |
| 37728.0 | 244.1339 | 12 238.7087 05 | 32.8824 03 | .164007 02 | .520666 03 | 11.477432 01 | .323E-5 11 | 6.939026 | 55 | 8 | 3.61 |
| 37730.0 | 254.7401 | 11 231.6687 06 | 32.8828 03 | .163981 02 | .475541 02 | 11.477439 01 | .283E-5 11 | 6.939241 | 48 | 8 | 3.25 |
| 37732.0 | 265.3482 | 23 224.6302 10 | 32.8830 04 | .163963 04 | .430430 05 | 11.477451 03 | .227E-5 11 | 6.939389 | 46 | 8 | 4.10 |
| 37734.0 | 275.9494 | 26 217.5911 11 | 32.8823 04 | .163972 04 | .385356 06 | 11.477466 02 | .207E-5 17 | 6.939305 | 38 | 8 | 3.32 |
| 37736.0 | 286.5506 | 22 210.5549 07 | 32.8827 02 | *163984 04 | *340292 05 | 11.477469 02 | *2520E-5 97 | 6.939209 | 37 | 8 | 1.91 |
| 37738.0 | 297.1537 | 18 203.5183 08 | 32.8830 02 | .164000 03 | .295243 04 | 11.477478 02 | .2185E-5 94 | 6.939068 | 51 | 8 | 2.83 |
| 37740.0 | 307.7602 | 14 196.4817 07 | 32.8832 02 | .164023 03 | .250204 03 | 11.477491 02 | .215E-5 15 | 6.938870 | 47 | 8 | 2.97 |
| 37742.0 | 318.3632 | 14 189.4435 08 | 32.8826 02 | .164071 02 | .205195 03 | 11.477505 02 | .2603E-5 85 | 6.938466 | 51 | 8 | 3.48 |
| 37744.0 | 328.9661 | 19 182.4052 08 | 32.8819 02 | .164123 03 | .160208 04 | 11.477519 02 | .3471E-5 86 | 6.938034 | 47 | 8 | 3.97 |
| 37746.0 | 339.5618 | 24 175.3660 11 | 32.8811 02 | .164188 03 | .115270 06 | 11.477541 02 | .4226E-5 98 | 6.937486 | 43 | 8 | 4.03 |
| 37748.0 | 350.1565 | 26 168.3284 10 | 32.8799 02 | .164255 03 | .070366 06 | 11.477564 02 | .4384E-5 .80 | 6.936913 | 56 | 8 | 4.07 |
| 37750.0 | .7415 | 32 161.2912 12 | 32.8784 02 | .164333 03 | .025525 06 | 11.477586 03 | .3560E-5 .87 | 6.936258 | 54 | 8 | 3.85 |
| 37752.0 | 11.3229 | 23 154.2539 10 | 32.8768 02 | .164419 02 | .980722 04 | 11.477613 02 | .2957E-5 71 | 6.935534 | 63 | 8 | 3.06 |
| 37754.0 | 21.8980 | 21 147.2148 09 | 32.8758 02 | .164511 02 | .935966 04 | 11.477633 02 | .2432E-5 85 | 6.934767 | 60 | 8 | 2.87 |
| 37756.0 | 32.4682 | 21 140.1776 11 | 32.8745 03 | .164593 02 | .891238 04 | 11.477632 02 | .1794E-5 .95 | 6.934080 | 51 | 8 | 2.92 |
| 37758.0 | 43.0389 | 14 133.1355 08 | 32.8736 03 | .164663 02 | .806536 04 | 11.477653 01 | .1993E-5 .83 | 6.933497 | 49 | 8 | 2.50 |
| 37760.0 | 53.6088 | 18 126.0933 07 | 32.8730 04 | .164715 02 | .801854 04 | 11.477679 02 | .205E-5 11 | 6.933050 | 48 | 8 | 3.43 |
| 37762.0 | 64.1612 | 18 119.0523 06 | 32.8730 04 | .164764 02 | .757232 05 | 11.477694 02 | .1728E-5 .86 | 6.932639 | 48 | 8 | 3.67 |
| 37764.0 | 74.7109 | 17 112.0123 04 | 32.8729 04 | .164800 02 | .712630 04 | 11.477704 02 | .1779E-5 .92 | 6.932340 | 49 | 8 | 3.76 |
| 37766.0 | 85.2607 | 13 104.9733 03 | 32.8728 03 | .164824 01 | .668040 03 | 11.477709 02 | .1641E-5 .91 | 6.932136 | 56 | 8 | 3.23 |
| 37768.0 | 95.8108 | 13 97.9337 04 | 32.8719 03 | .164829 01 | .623463 03 | 11.477713 02 | .1915E-5 .87 | 6.932091 | 62 | 8 | 3.39 |
| 37770.0 | 106.3634 | 09 90.8932 04 | 32.8718 02 | .164817 01 | .578895 02 | 11.477720 01 | .2654E-5 .70 | 6.932186 | 76 | 8 | 2.78 |
| 37772.0 | 116.9176 | 10 83.8526 04 | 32.8722 02 | .164785 01 | .534345 02 | 11.477730 01 | .3071E-5 .49 | 6.932450 | 73 | 8 | 2.49 |
| 37774.0 | 127.4706 | 11 76.8124 04 | 32.8726 02 | .164736 02 | .489823 02 | 11.477741 01 | .2835E-5 .60 | 6.932856 | 65 | 8 | 2.27 |
| 37776.0 | 138.0303 | 09 69.7754 04 | 32.8757 02 | .164655 01 | .445302 02 | 11.477746 01 | .3216E-5 .72 | 6.933524 | 57 | 8 | 2.29 |
| 37778.0 | 148.5920 | 12 62.7358 05 | 32.8768 02 | .164574 01 | .400805 03 | 11.477757 01 | .3824E-5 .69 | 6.934192 | 52 | 8 | 2.79 |
| 37780.0 | 159.1593 | 12 55.6970 06 | 32.8781 02 | .164489 01 | .356324 03 | 11.477763 01 | .3372E-5 .81 | 6.934895 | 62 | 8 | 3.56 |
| 37782.0 | 169.7348 | 11 48.6605 06 | 32.8798 02 | .164399 01 | .311842 03 | 11.477762 01 | .2546E-5 .63 | 6.935642 | 66 | 8 | 3.38 |
| 37784.0 | 180.3143 | 12 41.6211 06 | 32.8816 01 | .164313 01 | .267377 03 | 11.477757 01 | .1777E-5 .85 | 6.936357 | 79 | 8 | 3.84 |

| T (MJD) | w | a | g | i | e | M | n | A | n'/2 | q | N | D | G |
|------------|-------------|-------------|------------|-----------|------------|--------------|-------------|--------------|------|------|---|---|---|
| 37786.0 | 190.9052 12 | 34.5925 06 | 38.0021 01 | 164234 01 | •222692 02 | 11.477754 01 | •1269E-5 57 | 6.937015 83 | 8 | 3.43 | | | |
| 37788.0 | 201.4976 11 | 27.5A42 D3 | 32.0024 01 | 164164 01 | •178406 02 | 11.477755 01 | •1073E-5 73 | 6.937594 92 | 8 | 3.42 | | | |
| 37790.0 | 212.0978 11 | 20.5079 D5 | 32.0025 01 | 164095 01 | •133912 02 | 11.477755 01 | •1519E-5 44 | 6.938167 101 | 8 | 3.36 | | | |
| 37792.0 | 222.6974 10 | 13.4711 D4 | 32.0026 01 | 164036 01 | •089428 02 | 11.477759 01 | •1563E-5 55 | 6.938660 83 | 8 | 3.08 | | | |
| 37794.0 | 233.3001 12 | 6.4249 01 | 32.0026 01 | 163981 01 | •046949 03 | 11.477763 01 | •1954E-5 59 | 6.939109 81 | 8 | 3.32 | | | |
| 37796.0 | 243.9057 13 | 359.3944 06 | 32.0027 02 | 163940 02 | •000476 03 | 11.477767 01 | •1487E-5 61 | 6.939448 60 | 8 | 3.24 | | | |
| 37798.0 | 254.5092 10 | 352.3603 09 | 32.0027 03 | 163910 03 | •956016 04 | 11.477768 02 | •129E-5 11 | 6.939698 40 | 8 | 2.91 | | | |
| 37800.0 | 265.1205 64 | 345.3210 08 | 32.0027 03 | 163896 15 | •911554 11 | 11.477773 04 | •1332E-5 76 | 6.939816 34 | 8 | 2.61 | | | |
| 37802.0 | 275.7273 41 | 338.2631 06 | 32.0027 04 | 163909 10 | •867107 08 | 11.477779 03 | •94E-6 11 | 6.939705 32 | 8 | 2.42 | | | |
| 37804.0 | 286.3341 17 | 331.2436 04 | 32.0027 05 | 163945 03 | •822664 04 | 11.477772 02 | •73E-6 14 | 6.939411 34 | 8 | 2.31 | | | |
| 37806.0 | 296.9484 18 | 324.2087 10 | 32.0027 10 | 163972 05 | •778215 05 | 11.477782 03 | •85E-6 16 | 6.9399177 32 | 8 | 2.52 | | | |
| 37808.0 | 307.5519 26 | 317.1727 12 | 32.0027 10 | 163994 21 | •733794 04 | 11.477792 02 | •802E-6 94 | 6.938994 39 | 8 | 2.74 | | | |
| 37810.0 | 318.1649 40 | 310.1246 13 | 32.0027 11 | 164115 29 | •689392 05 | 11.477809 02 | •894E-6 99 | 6.931977 39 | 8 | 3.05 | | | |
| 37812.0 | 328.7555 23 | 301.0909 11 | 32.0027 11 | 164107 06 | •645012 05 | 11.477816 02 | •70E-6 11 | 6.938048 45 | 8 | 3.49 | | | |
| 37814.0 | 339.3444 23 | 296.0339 10 | 32.0027 14 | 164171 04 | •600555 05 | 11.477823 02 | •4E-7 14 | 6.937510 52 | 8 | 4.00 | | | |
| 37816.0 | 349.9346 20 | 289.0146 08 | 32.0027 03 | 164259 03 | •556305 04 | 11.477826 02 | -•14E-6 11 | 6.936778 63 | 8 | 3.90 | | | |
| 37818.0 | •5216 17 | 281.9710 08 | 32.0027 02 | 164358 03 | •511961 04 | 11.477832 02 | •29E-6 13 | 6.935957 62 | 8 | 3.81 | | | |
| 37820.0 | 11.1062 12 | 274.9260 08 | 32.0027 02 | 164491 02 | •467626 03 | 11.477835 01 | •439E-6 97 | 6.935180 60 | 8 | 3.13 | | | |
| 37822.0 | 21.6870 11 | 261.8973 05 | 32.0027 01 | 164542 02 | •423310 02 | 11.477847 01 | •175E-6 54 | 6.934424 59 | 8 | 2.65 | | | |
| 37824.0 | 32.2574 09 | 260.8598 05 | 32.0027 01 | 164624 02 | •379014 02 | 11.477861 01 | •283E-6 66 | 6.9333734 53 | 8 | 2.38 | | | |
| 37826.0 | 42.8197 09 | 253.8208 05 | 32.0027 01 | 164700 02 | •334746 02 | 11.477870 01 | -•144E-6 53 | 6.933096 61 | 8 | 2.91 | | | |
| 37828.0 | 53.3763 08 | 246.7823 04 | 32.0027 01 | 164767 02 | •290491 01 | 11.477874 01 | -•275E-6 56 | 6.932546 56 | 8 | 2.43 | | | |
| 37830.0 | 63.9294 06 | 239.7424 03 | 32.0027 01 | 164817 02 | •246247 01 | 11.477880 01 | -•109E-6 52 | 6.932126 53 | 8 | 2.03 | | | |
| 37832.0 | 74.4789 08 | 232.7034 03 | 32.0027 02 | 164851 03 | •202008 02 | 11.477885 01 | •115E-6 43 | 6.931843 61 | 8 | 2.58 | | | |
| 37834.0 | 85.0288 10 | 225.6638 05 | 32.0027 02 | 164872 03 | •157773 02 | 11.477884 01 | •47E-7 66 | 6.931667 66 | 8 | 3.46 | | | |
| 37836.0 | 95.5799 10 | 218.6216 04 | 32.0027 02 | 164966 03 | •113540 02 | 11.477881 01 | -•89E-7 57 | 6.931720 76 | 8 | 3.68 | | | |
| 37838.0 | 106.1332 12 | 211.5802 04 | 32.0027 02 | 164844 04 | •069301 02 | 11.477878 01 | -•203E-6 61 | 6.931899 85 | 8 | 4.46 | | | |
| 37840.0 | 116.6874 15 | 204.5395 04 | 32.0027 02 | 164801 04 | •025054 03 | 11.477874 02 | -•183E-6 94 | 6.932261 80 | 8 | 4.69 | | | |
| 37842.0 | 127.2486 23 | 197.4999 04 | 32.0027 02 | 164756 07 | •980789 04 | 11.477866 02 | •6E-7 13 | 6.932641 70 | 8 | 4.75 | | | |
| 37844.0 | 137.8092 37 | 190.4607 07 | 32.0027 03 | 164695 12 | •936525 07 | 11.477865 03 | •67E-6 18 | 6.933145 53 | 8 | 4.66 | | | |

| (MD) | w | Ω | i | e | M | n | n'/2 | q | N | D | σ |
|---------|----------|----|----------|----|---------|----|---------|----|---------|----|------------|
| 37666.0 | 259.6035 | 19 | 8.4830 | 03 | 33.3651 | 02 | .188220 | 02 | .808532 | 06 | 11.084422 |
| 37668.0 | 269.4042 | 24 | 1.9165 | 04 | 33.3649 | 02 | .188213 | 02 | .977383 | 07 | 11.084427 |
| 37670.0 | 279.2095 | 29 | 355.3492 | 07 | 33.3647 | 03 | .188212 | 02 | .146252 | 08 | 11.084437 |
| 37672.0 | 289.0132 | 25 | 348.7825 | 06 | 33.3645 | 03 | .188217 | 02 | .315150 | 07 | 11.084452 |
| 37674.0 | 298.8169 | 20 | 342.2158 | 05 | 33.3642 | 02 | .188231 | 01 | .484066 | 06 | 11.084472 |
| 37676.0 | 308.6171 | 22 | 335.6479 | 05 | 33.3632 | 02 | .188262 | 02 | .653029 | 07 | 11.084502 |
| 37678.0 | 318.4077 | 23 | 329.0808 | 05 | 33.3624 | 03 | .188301 | 02 | .822060 | 07 | 11.084529 |
| 37680.0 | 328.2019 | 21 | 322.5136 | 05 | 33.3611 | 02 | .188355 | 02 | .991119 | 07 | 11.084543 |
| 37682.0 | 337.9978 | 22 | 315.9465 | 05 | 33.3598 | 02 | .188425 | 02 | .160211 | 07 | 11.084559 |
| 37684.0 | 347.7898 | 20 | 309.3789 | 04 | 33.3585 | 02 | .188500 | 02 | .329362 | 07 | 11.084584 |
| 37686.0 | 357.5836 | 23 | 302.8112 | 05 | 33.3569 | 02 | .188581 | 02 | .498556 | 08 | 11.084615 |
| 37688.0 | 7.3701 | 21 | 296.2429 | 05 | 33.3550 | 02 | .188660 | 03 | .667819 | 07 | 11.084648 |
| 37690.0 | 17.1497 | 21 | 289.6757 | 05 | 33.3524 | 02 | .188740 | 03 | .837139 | 07 | 11.084685 |
| 37692.0 | 26.9173 | 17 | 283.1067 | 04 | 33.3505 | 02 | .188811 | 03 | .006547 | 06 | 11.084712 |
| 37694.0 | 36.6849 | 12 | 276.5368 | 03 | 33.3488 | 02 | .188886 | 02 | .175998 | 04 | 11.084737 |
| 37696.0 | 46.4482 | 10 | 269.9670 | 03 | 33.3472 | 02 | .188959 | 02 | .345504 | 04 | 11.084762 |
| 37698.0 | 56.2106 | 10 | 263.3966 | 04 | 33.3450 | 02 | .189028 | 02 | .515052 | 04 | 11.084781 |
| 37700.0 | 65.9691 | 11 | 256.8242 | 03 | 33.3438 | 01 | .189065 | 02 | .684664 | 04 | 11.084815 |
| 37702.0 | 75.7304 | 11 | 250.2219 | 03 | 33.3430 | 01 | .189095 | 02 | .854312 | 04 | 11.084837 |
| 37704.0 | 85.4862 | 11 | 243.6803 | 04 | 33.3426 | 01 | .189105 | 02 | .024018 | 04 | 11.084864 |
| 37706.0 | 95.2447 | 10 | 237.1082 | 03 | 33.3427 | 01 | .189092 | 02 | .193749 | 03 | 11.084871 |
| 37708.0 | 105.0020 | 11 | 230.5366 | 05 | 33.3426 | 02 | .189060 | 02 | .363519 | 04 | 11.084892 |
| 37710.0 | 114.7627 | 16 | 223.9652 | 06 | 33.3429 | 03 | .189013 | 03 | .533329 | 07 | 11.084916 |
| 37712.0 | 124.5309 | 26 | 217.3939 | 08 | 33.3437 | 03 | .188964 | 03 | .703171 | 11 | 11.084947 |
| 37714.0 | 134.3022 | 40 | 210.8232 | 13 | 33.3449 | 02 | .188910 | 04 | .873070 | 16 | 11.084957 |
| 37716.0 | 144.0727 | 46 | 204.2520 | 11 | 33.3468 | 02 | .188850 | 04 | .043034 | 02 | .11.084987 |
| 37718.0 | 153.8342 | 38 | 197.6802 | 10 | 33.3481 | 02 | .188774 | 03 | .213095 | 14 | 11.085021 |
| 37720.0 | 163.6164 | 23 | 191.1118 | 06 | 33.3493 | 01 | .188690 | 02 | .383157 | 08 | 11.085063 |
| 37722.0 | 173.3971 | 27 | 184.5428 | 06 | 33.3502 | 02 | .188860 | 02 | .553313 | 09 | 11.085106 |

Satellite 1959 Eta

1 March - 30 April 1962

| T (MD) | w | Q | 1 | e | M | n | n'/2 | q | N | D | o | |
|-----------|----------|----|----------|-----|---------|-----|---------|-----|----------|----|-----------|----|
| 37724.0 | 183.1761 | 15 | 177.9736 | 03. | 31.3515 | 01. | 1888511 | 02 | .723567 | 05 | 11.085143 | 02 |
| 37726.0 | 192.9803 | 12 | 171.6406 | 06. | 32.3232 | 01. | 1888446 | 02 | .893893 | 04 | 11.085182 | 02 |
| 37728.0 | 202.7495 | 11 | 164.8236 | 05. | 32.3443 | 01. | 1888385 | 02 | .064287 | 04 | 11.085215 | 02 |
| 37730.0 | 212.5478 | 12 | 158.6265 | 04. | 32.3557 | 01. | 1888339 | 02 | .234732 | 04 | 11.085240 | 02 |
| 37732.0 | 222.2440 | 17 | 151.6592 | 06. | 32.3556 | 01. | 1888290 | 03 | .405259 | 06 | 11.085267 | 03 |
| 37734.0 | 222.3440 | 17 | 151.6592 | 06. | 32.3556 | 01. | 1888290 | 03 | .575825 | 05 | 11.085289 | 03 |
| 37736.0 | 241.9520 | 22 | 138.8562 | 06. | 31.3526 | 02. | 1888236 | 06 | .746439 | 07 | 11.085317 | 04 |
| 37738.0 | 251.7582 | 19 | 131.9910 | 05 | 32.3585 | 02. | 1888225 | 05 | .917102 | 06 | 11.085355 | 02 |
| 37740.0 | 261.5585 | 19 | 125.4223 | 07. | 31.3592 | 03. | 1888209 | 06 | .087835 | 06 | 11.085378 | 06 |
| 37742.0 | 271.3574 | 39 | 118.8524 | 03. | 32.3597 | 03. | 1888211 | 12 | .258637 | 13 | 11.085422 | 09 |
| 37744.0 | 281.1633 | 22 | 112.2834 | 05 | 31.3598 | 03. | 1888230 | 08 | .429509 | 08 | 11.085469 | 02 |
| 37746.0 | 290.9673 | 26 | 105.7346 | 05. | 32.3597 | 03. | 1888284 | 09 | .600491 | 09 | 11.085526 | 04 |
| 37748.0 | 300.7705 | 18 | 99.1446 | 04. | 32.3596 | 02. | 1888292 | 07 | .771609 | 06 | 11.085585 | 03 |
| 37750.0 | 310.5744 | 13 | 92.5750 | 04. | 32.3594 | 02. | 1888320 | 05 | .942851 | 05 | 11.085654 | 03 |
| 37752.0 | 320.3739 | 12 | 86.0657 | 04. | 32.3583 | 02. | 1888356 | 04 | .114229 | 04 | 11.085716 | 02 |
| 37754.0 | 330.1712 | 14 | 79.4360 | 04. | 32.3574 | 02. | 1888412 | 04 | .285724 | 05 | 11.085773 | 02 |
| 37756.0 | 339.9589 | 16 | 72.8661 | 05. | 32.3566 | 02. | 1888465 | 05 | .457351 | 06 | 11.085823 | 02 |
| 37758.0 | 349.7506 | 13 | 66.2951 | 05 | 32.3556 | 02. | 1888546 | 04. | .629045 | 04 | 11.085867 | 02 |
| 37760.0 | 359.5383 | 12 | 59.7242 | 04. | 32.3547 | 02. | 1888629 | 04 | .800816 | 04 | 11.085897 | 02 |
| 37762.0 | 9.3230 | 10 | 53.1597 | 04. | 32.3537 | 02. | 1888717 | 03 | .972656 | 03 | 11.085932 | 01 |
| 37764.0 | 19.1076 | 08 | 46.5829 | 05 | 32.3526 | 01. | 1888812 | 03 | .144561 | 03 | 11.085979 | 01 |
| 37766.0 | 28.8842 | 07 | 40.0123 | 03 | 32.3514 | 01. | 1888888 | 03 | .316564 | 02 | 11.086023 | 01 |
| 37768.0 | 38.6536 | 10 | 33.4415 | 05 | 32.3507 | 02. | 1888961 | 05 | .488866 | 03 | 11.086075 | 02 |
| 37770.0 | 48.4167 | 13 | 26.8702 | 06 | 32.3497 | 02. | 1889021 | 06 | .660872 | 04 | 11.086141 | 02 |
| 37772.0 | 58.1797 | 14 | 20.2978 | 07 | 32.3492 | 02. | 1889079 | 05 | .833204 | 03 | 11.086201 | 01 |
| 37774.0 | 67.9387 | 12 | 13.7246 | 08. | 32.3486 | 02. | 1889121 | 05 | .005675 | 03 | 11.086269 | 01 |
| 37776.0 | 77.6969 | 14 | 7.1346 | 11. | 32.3478 | 05. | 1889155 | 05 | .178282 | 04 | 11.086334 | 02 |
| 37778.0 | 87.4551 | 07 | .5638 | 06 | 32.3475 | 02. | 1889189 | 04 | .351018 | 02 | 11.086393 | 01 |
| 37780.0 | 97.2163 | 06 | 354.0124 | 06. | 32.3470 | 02. | 1889189 | 04 | .5223853 | 02 | 11.086439 | 01 |
| 37782.0 | 107.9754 | 08 | 347.4286 | 07 | 32.3469 | 03. | 1889161 | 05 | .696786 | 03 | 11.086474 | 01 |
| 37784.0 | 116.7379 | 06 | 340.8671 | 06 | 32.3472 | 02. | 1889132 | 04 | .869768 | 02 | 11.086510 | 01 |

| T (MT) | w | Ω | i | e | M | η | η' | η'/2 | q | N | D | σ |
|-----------|----------|----|----------|----|---------|----|---------|------|---------|----|-----------|----|
| 37786.0 | 126.4995 | 07 | 334.2926 | 05 | 33.3479 | 02 | •189089 | 03 | •042813 | 02 | 11.086531 | 01 |
| 37788.0 | 136.2627 | 07 | 327.7196 | 05 | 33.3482 | 02 | •189023 | 03 | •215895 | 02 | 11.086552 | 01 |
| 37790.0 | 146.0290 | 07 | 321.1470 | 05 | 33.3486 | 03 | •188956 | 04 | •389012 | 02 | 11.086562 | 01 |
| 37792.0 | 155.8042 | 05 | 314.5734 | 03 | 33.3498 | 03 | •188891 | 03 | •562155 | 01 | 11.086584 | 01 |
| 37794.0 | 165.5832 | 06 | 308.0010 | 03 | 33.3509 | 03 | •188812 | 04 | •735344 | 02 | 11.086607 | 01 |
| 37796.0 | 175.3693 | 06 | 301.4285 | 03 | 33.3523 | 03 | •188725 | 04 | •908586 | 01 | 11.086644 | 01 |
| 37798.0 | 185.1560 | 07 | 294.8563 | 04 | 33.3537 | 03 | •188646 | 04 | •081913 | 01 | 11.086685 | 01 |
| 37800.0 | 194.9480 | 09 | 286.2826 | 06 | 33.3552 | 03 | •188564 | 04 | •255325 | 02 | 11.086728 | 01 |
| 37802.0 | 204.7385 | 11 | 281.7105 | 09 | 33.3566 | 04 | •188506 | 04 | •428835 | 02 | 11.086771 | 01 |
| 37804.0 | 214.5333 | 10 | 275.1373 | 08 | 33.3577 | 03 | •188471 | 05 | •602415 | 01 | 11.086807 | 01 |
| 37806.0 | 224.3366 | 05 | 268.5633 | 05 | 33.3584 | 02 | •188432 | 03 | •776057 | 01 | 11.086838 | 00 |
| 37808.0 | 234.1338 | 05 | 261.9933 | 05 | 33.3595 | 02 | •188395 | 03 | •949776 | 01 | 11.086866 | 00 |
| 37810.0 | 243.9390 | 05 | 255.4203 | 05 | 33.3587 | 02 | •188382 | 03 | •123533 | 01 | 11.086891 | 01 |
| 37812.0 | 253.7421 | 06 | 248.8495 | 05 | 33.3593 | 01 | •188361 | 03 | •297340 | 01 | 11.086915 | 00 |
| 37814.0 | 263.5465 | 05 | 242.2787 | 05 | 33.3597 | 01 | •188346 | 02 | •471188 | 01 | 11.086936 | 00 |
| 37816.0 | 273.3492 | 05 | 235.7072 | 05 | 33.3594 | 01 | •188331 | 02 | •645079 | 01 | 11.086955 | 00 |
| 37818.0 | 283.1510 | 06 | 229.1358 | 05 | 33.3591 | 01 | •188339 | 02 | •819009 | 01 | 11.086974 | 00 |
| 37820.0 | 292.9521 | 07 | 222.5648 | 06 | 33.3582 | 02 | •188363 | 03 | •992979 | 01 | 11.086992 | 00 |
| 37822.0 | 302.7572 | 07 | 215.9924 | 05 | 33.3573 | 02 | •188383 | 02 | •166969 | 01 | 11.087004 | 00 |
| 37824.0 | 312.5594 | 05 | 209.4197 | 03 | 33.3565 | 01 | •188428 | 02 | •340992 | 01 | 11.087014 | 00 |
| 37826.0 | 322.3645 | 05 | 202.8478 | 03 | 33.3556 | 01 | •188469 | 02 | •515037 | 01 | 11.087031 | 01 |
| 37828.0 | 332.1643 | 05 | 196.2754 | 04 | 33.3545 | 01 | •188509 | 03 | •689129 | 01 | 11.087055 | 00 |
| 37830.0 | 341.9632 | 10 | 189.7031 | 05 | 33.3530 | 01 | •188574 | 06 | •863246 | 04 | 11.087080 | 02 |
| 37832.0 | 351.7542 | 07 | 183.1296 | 04 | 33.3514 | 01 | •188635 | 04 | •037432 | 02 | 11.087103 | 01 |
| 37834.0 | 1.5413 | 07 | 176.5574 | 04 | 33.3499 | 01 | •188722 | 04 | •211662 | 01 | 11.087128 | 01 |
| 37836.0 | 11.3240 | 07 | 169.9843 | 03 | 33.3488 | 01 | •188826 | 04 | •385946 | 01 | 11.087155 | 00 |
| 37838.0 | 21.1066 | 08 | 163.4117 | 05 | 33.3478 | 01 | •188909 | 05 | •560580 | 02 | 11.087182 | 01 |
| 37840.0 | 30.8861 | 07 | 156.8375 | 04 | 33.3472 | 02 | •188991 | 04 | •734673 | 02 | 11.087209 | 01 |
| 37842.0 | 40.6619 | 06 | 150.2631 | 04 | 33.3460 | 01 | •189067 | 03 | •909124 | 01 | 11.087240 | 00 |
| 37844.0 | 50.4347 | 07 | 143.6876 | 06 | 33.3455 | 01 | •189113 | 04 | •083639 | 01 | 11.087274 | 01 |

Satellite 1960 Beta 1

| T (MD) | w | Ω | 1 | e | M | n | n'/2 | q | N | D | σ |
|-----------|---------|----|----------|----|---------|----|----------|----|--------|------------|------------|
| 37036.0 | 152.95 | 12 | 208.9036 | 10 | 48.3979 | 05 | 0.003652 | 07 | •32766 | 34 | •16444E-4 |
| 37038.0 | 160.40 | 13 | 199.8113 | 08 | 48.3988 | 04 | 0.003543 | 04 | •35326 | 35 | •17312189 |
| 37040.0 | 168.16 | 16 | 190.7194 | 09 | 48.3999 | 05 | 0.003443 | 05 | •37821 | 46 | •17261E-4 |
| 37042.0 | 175.90 | 17 | 181.6281 | 13 | 48.3881 | 08 | 0.003349 | 04 | •40344 | 47 | •16352E-4 |
| 37044.0 | 184.34 | 11 | 172.5259 | 09 | 48.3866 | 05 | 0.003248 | 03 | •42692 | 31 | •14911476 |
| 37046.0 | 193.14 | 12 | 163.4349 | 12 | 48.3891 | 07 | 0.003151 | 03 | •44959 | 33 | •11511239 |
| 37048.0 | 202.33 | 11 | 154.3391 | 09 | 48.3835 | 05 | 0.003065 | 03 | •47130 | 31 | •14.511014 |
| 37050.0 | 211.51 | 12 | 145.2448 | 08 | 48.3939 | 05 | 0.002979 | 03 | •49319 | 33 | •14.510822 |
| 37052.0 | 221.68 | 19 | 136.1512 | 09 | 48.3961 | 05 | 0.002909 | 05 | •51250 | 54 | •14.510663 |
| 37054.0 | 231.62 | 13 | 127.0625 | 09 | 48.3966 | 05 | 0.002828 | 09 | •53257 | 36 | •14.510536 |
| 37056.0 | 241.41 | 11 | 117.9684 | 08 | 48.3973 | 05 | 0.002783 | 08 | •55322 | 31 | •14.510446 |
| 37058.0 | 251.052 | 91 | 108.8746 | 08 | 48.3979 | 06 | 0.002740 | 08 | •57443 | 25 | •14.510388 |
| 37060.0 | 260.81 | 12 | 99.7775 | 09 | 48.3963 | 08 | 0.002719 | 10 | •59543 | 34 | •14.510374 |
| 37062.0 | 270.68 | 12 | 90.6629 | 09 | 48.3966 | 08 | 0.002713 | 10 | •61621 | 33 | •14.510417 |
| 37064.0 | 280.58 | 13 | 81.5885 | 10 | 48.3970 | 09 | 0.002723 | 11 | •63704 | 36 | •14.510520 |
| 37066.0 | 290.37 | 14 | 72.4930 | 09 | 48.3962 | 09 | 0.002740 | 11 | •65837 | 40 | •14.510666 |
| | | | | | | | | | 12 | •171E-4 | 53 |
| | | | | | | | | | | •0.080424 | 16 |
| | | | | | | | | | | 14 | 6.35 |
| | | | | | | | | | | | |
| 37080.0 | 356.840 | 99 | •8.0130 | 08 | 48.3914 | 12 | 0.003277 | 10 | •81661 | 28 | •1891E-4 |
| | | | | | | | | | 01 | •14.512740 | 12 |
| | | | | | | | | | | •0.075960 | 28 |
| | | | | | | | | | | 14 | 10.65 |

| T (MD) | w | Ω | i | e | M | n | Δ1/2 | q | Δ D | σ |
|-----------|---------|----|----------|----|---------|----|---------|----|--------|----|
| 37036.0 | 152.21 | 18 | 208.9298 | 35 | 48.3977 | 19 | .003644 | 67 | .31699 | 52 |
| 37038.0 | 159.94 | 19 | 199.8381 | 28 | 48.3987 | 15 | .003599 | 50 | .33919 | 54 |
| 37040.0 | 168.03 | 19 | 190.7449 | 28 | 48.3988 | 15 | .003501 | 50 | .36044 | 53 |
| 37042.0 | 175.75 | 21 | 181.6499 | 23 | 48.3959 | 14 | .003347 | 29 | .38281 | 58 |
| 37044.0 | 183.05 | 44 | 172.5717 | 22 | 48.3946 | 20 | .003303 | 53 | .4064 | 12 |
| 37046.0 | 192.03 | 29 | 163.4761 | 22 | 48.3953 | 11 | .003165 | 42 | .42538 | 81 |
| 37048.0 | 199.78 | 21 | 154.3753 | 14 | 48.3926 | 08 | .003188 | 15 | .44794 | 58 |
| 37050.0 | 208.81 | 18 | 145.2822 | 12 | 48.3926 | 07 | .003128 | 12 | .46694 | 51 |
| 37052.0 | 218.04 | 17 | 136.1878 | 11 | 48.3932 | 06 | .003044 | 11 | .48546 | 47 |
| 37054.0 | 227.57 | 15 | 127.0941 | 10 | 48.3932 | 06 | .002989 | 10 | .50319 | 42 |
| 37056.0 | 237.18 | 13 | 118.0003 | 08 | 48.3933 | 05 | .002941 | 07 | .52078 | 35 |
| 37058.0 | 247.02 | 15 | 108.9076 | 09 | 48.3941 | 07 | .002907 | 08 | .53775 | 41 |
| 37060.0 | 257.07 | 17 | 99.8143 | 12 | 48.3941 | 10 | .002880 | 09 | .55421 | 48 |
| 37062.0 | 266.91 | 16 | 90.7204 | 11 | 48.3937 | 09 | .002860 | 09 | .57133 | 44 |
| 37064.0 | 335.90 | 19 | 27.0701 | 13 | 48.3917 | 12 | .003151 | 09 | .69239 | 52 |
| 37078.0 | 344.82 | 11 | 17.9759 | 12 | 48.3919 | 12 | .003249 | 08 | .71246 | 31 |
| 37080.0 | 353.89 | 14 | 8.8837 | 15 | 48.3905 | 16 | .003377 | 13 | .73216 | 38 |
| 37082.0 | 2.22 | 12 | 359.7909 | 08 | 48.3899 | 09 | .003513 | 11 | .75394 | 32 |
| 37084.0 | 10.73 | 17 | 350.6976 | 06 | 48.3896 | 06 | .003637 | 08 | .77523 | 28 |
| 37086.0 | 18.769 | 97 | 341.6041 | 05 | 48.3897 | 05 | .003738 | 08 | .79787 | 27 |
| 37102.0 | 77.41 | 59 | 268.8480 | 18 | 48.3818 | 15 | .004243 | 19 | .9966 | 16 |
| 37104.0 | 83.45 | 11 | 259.7605 | 09 | 48.3875 | 07 | .004174 | 13 | .02518 | 31 |
| 37106.0 | 90.006 | 83 | 250.6692 | 06 | 48.3886 | 05 | .004178 | 12 | .05241 | 23 |
| 37108.0 | 96.482 | 56 | 241.5770 | 08 | 48.3875 | 06 | .004185 | 13 | .07988 | 16 |
| 37110.0 | 103.066 | 57 | 232.4857 | 07 | 48.3863 | 05 | .004194 | 11 | .10707 | 16 |
| 37112.0 | 109.698 | 45 | 223.3933 | 05 | 48.3851 | 04 | .004173 | 06 | .13417 | 12 |
| 37114.0 | 16.435 | 43 | 214.3001 | 05 | 48.3850 | 04 | .004126 | 05 | .16101 | 12 |

| T (MD) | w | Q | i | e | M | n | n'/2 | q | N | D | σ |
|-----------|------------|-------------|------------|-------------|-----------|--------------|--------------|-------------|----|-------|---|
| 37116.0 | 123.292 43 | 203.207 09 | 48.3845 03 | .0004067 04 | *18754 12 | 14.513112 00 | -73E-7 34 | 7.070208 46 | 14 | 7.12 | |
| 37118.0 | 130.367 48 | 196.114 05 | 48.3846 04 | .0003995 05 | *21351 13 | 14.512889 00 | -471E-6 63 | 7.070795 41 | 14 | 7.40 | |
| 37120.0 | 137.69 13 | 187.012 07 | 48.3847 05 | .0003912 08 | *23884 35 | 14.512635 00 | -1398E-5 43 | 7.071467 40 | 14 | 7.80 | |
| 37122.0 | 144.98 13 | 177.925 07 | 48.3846 05 | .0003820 07 | *26430 36 | 14.512354 01 | -2129E-5 51 | 7.072213 37 | 14 | 7.78 | |
| 37124.0 | 151.33 31 | 168.842 20 | 48.3846 10 | .0003671 13 | *29237 84 | 14.512050 01 | -2692E-5 56 | 7.073364 34 | 14 | 9.58 | |
| 37126.0 | 159.32 35 | 159.743 20 | 48.3843 12 | .0003574 17 | *31596 96 | 14.511731 01 | -2873E-5 60 | 7.074157 32 | 14 | 8.97 | |
| 37128.0 | 166.48 43 | 150.660 6 | 48.3817 15 | .0003414 23 | *3419 12 | 14.511409 01 | -2467E-5 60 | 7.075402 28 | 14 | 7.61 | |
| 37130.0 | 174.33 88 | 141.5665 47 | 48.3791 27 | .0003373 93 | *3659 24 | 14.511094 01 | -183E-5 11 | 7.075793 26 | 14 | 9.22 | |
| 37132.0 | 182.42 57 | 132.4692 22 | 48.3807 15 | .0003201 73 | *3893 16 | 14.510785 01 | -1702E-5 62 | 7.077712 31 | 14 | 9.18 | |
| 37134.0 | 190.20 50 | 123.3735 20 | 48.3819 14 | .0002999 67 | *4137 14 | 14.510491 01 | -1831E-5 81 | 7.078644 28 | 14 | 8.03 | |
| 37136.0 | 199.15 51 | 114.2793 21 | 48.3821 14 | .0002897 71 | *4348 14 | 14.510216 00 | -1813E-5 90 | 7.07959 27 | 14 | 8.41 | |
| 37138.0 | 310.38 20 | 14.2352 25 | 48.3936 22 | .0003166 34 | *63352 54 | 14.509716 01 | .709E-5 34 | 7.077710 21 | 14 | 7.09 | |
| 37140.0 | 319.37 25 | 5.1430 31 | 48.3963 23 | .0003008 30 | *65477 68 | 14.509953 03 | .13301E-4 97 | 7.078795 20 | 14 | 10.46 | |
| 37162.0 | | | | | | | | | | | |
| 37164.0 | | | | | | | | | | | |
| 37166.0 | 347.86 55 | 337.8364 35 | 48.3830 19 | .0003270 76 | *7151 15 | 14.510920 01 | .1565E-4 30 | 7.076581 13 | 14 | 5.92 | |
| 37168.0 | 355.55 30 | 328.7970 17 | 48.3906 07 | .0003453 19 | *74028 84 | 14.511273 01 | .1453E-4 16 | 7.075169 15 | 14 | 8.00 | |
| 37170.0 | 3.34 30 | 319.6610 14 | 48.3915 08 | .0003526 06 | *76532 82 | 14.511631 01 | .12956E-4 94 | 7.074534 21 | 14 | 11.12 | |
| 37172.0 | 11.29 24 | 310.5671 12 | 48.3916 07 | .0003633 06 | *78997 67 | 14.511989 01 | .1179E-4 13 | 7.073656 20 | 14 | 9.81 | |
| 37174.0 | 18.67 26 | 301.4694 17 | 48.3918 11 | .0003737 05 | *81623 73 | 14.512341 01 | .1131E-4 11 | 7.072802 20 | 14 | 9.63 | |
| 37176.0 | 26.59 27 | 292.3783 23 | 48.3925 14 | .0002834 06 | *84100 75 | 14.512690 02 | *1080E-4 30 | 7.072003 17 | 14 | 8.66 | |
| 37178.0 | 34.30 25 | 283.2856 19 | 48.3919 14 | .0003939 06 | *86641 71 | 14.513019 01 | *1132E-4 11 | 7.071150 18 | 14 | 9.13 | |
| 37180.0 | 41.66 13 | 274.1954 09 | 48.3885 06 | .0004024 06 | *89281 35 | 14.513330 01 | *1114E-4 10 | 7.070446 17 | 14 | 9.61 | |
| 37182.0 | 48.96 19 | 265.1038 13 | 48.3873 09 | .0004098 09 | *91943 54 | 14.513617 01 | *1113E-4 12 | 7.069823 18 | 14 | 13.67 | |
| 37184.0 | 57.72 25 | 256.0037 12 | 48.3869 06 | .0004039 17 | *94207 69 | 14.513869 01 | *11313E-4 77 | 7.070166 14 | 14 | 8.82 | |
| 37186.0 | 64.77 30 | 246.9097 13 | 48.3872 07 | .0004087 18 | *96949 82 | 14.514091 01 | *1191E-4 11 | 7.069754 13 | 14 | 9.55 | |
| 37188.0 | 72.17 12 | 237.8148 07 | 48.3883 05 | .0004102 09 | *99598 32 | 14.514278 01 | *1257E-4 11 | 7.069582 13 | 14 | 6.76 | |
| 37190.0 | 78.64 11 | 228.7214 09 | 48.3882 06 | .0004146 10 | *02514 30 | 14.514428 01 | *13018E-4 72 | 7.069219 17 | 14 | 8.58 | |
| 37192.0 | 85.100 71 | 219.6228 08 | 48.3867 52 | .0004177 07 | *05442 20 | 14.514537 01 | *13191E-4 46 | 7.068968 19 | 14 | 5.60 | |

| T (MD) | w | Ω | i | e | M | n | $n'/2$ | q | N | D | σ |
|-----------|-----------|-------------|------------|------------|------------|--------------|-------------|----------|-----|---|------|
| 37160.0 | 15.95 12 | 251.5468 23 | 47.2365 11 | .010643 32 | *70594 32 | 12.17436 40 | *1216E-3 99 | 7.896464 | 37 | 2 | 6.74 |
| 37162.0 | 19.067 25 | 245.3731 06 | 47.2362 04 | .011296 05 | *058904 69 | 12.174182 83 | *1847E-3 34 | 7.891341 | 144 | 2 | 5.05 |
| 37164.0 | 22.017 21 | 239.2066 08 | 47.2403 05 | .012169 12 | *413429 59 | 12.17472 14 | *1679E-3 50 | 7.884139 | 54 | 2 | 5.63 |
| 37166.0 | 26.777.45 | 233.0322 09 | 47.2393 06 | .012990 13 | *76428 12 | 12.17482 16 | *1878E-3 58 | 7.877549 | 31 | 2 | 3.73 |
| 37168.0 | 37.230 10 | 220.6856 05 | 47.2433 03 | .015058 08 | *467071 29 | 12.175381 32 | *1380E-3 21 | 7.860798 | 68 | 4 | 4.32 |
| 37170.0 | 43.173 18 | 214.5137 09 | 47.2419 04 | .016185 09 | *818158 49 | 12.175857 41 | *1389E-3 26 | 7.851601 | 48 | 4 | 4.77 |
| 37172.0 | 49.418 21 | 208.3423 12 | 47.2365 05 | *017326 18 | *169537 56 | 12.175951 32 | *1797E-3 35 | 7.842456 | 37 | 4 | 5.94 |
| 37174.0 | 55.744 16 | 202.1697 11 | 47.2283 06 | .018521 13 | *522113 44 | 17.176764 75 | *2418E-3 39 | 7.832571 | 31 | 4 | 5.30 |

Satellite 1960 Iota 2

2 January - 27 February 1962

| T (MJD) | w | a | e | M | n | n' | 1/2 | q | N | D | c |
|------------|------------|-------|-----|---------|-----|---------|-----|-----------|-----|-----------|-----|
| 37666.0 | 80.8702 82 | 122.1 | .02 | 4012108 | .05 | •443633 | 22 | 12.197490 | 0.9 | -•93E-6 | 12 |
| 37668.0 | 86.523 11 | 114.4 | .06 | 4132303 | .03 | •012120 | .07 | •838615 | 30 | 12.197509 | 1.2 |
| 37670.0 | 92.156 11 | 109.1 | .07 | 401222 | .07 | •233641 | 31 | 12.197515 | 1.2 | -•163E-5 | 15 |
| 37672.0 | 97.817 12 | 103.1 | .06 | 4012114 | .08 | •628577 | 34 | 12.197485 | 1.7 | -•104E-9 | 14 |
| 37674.0 | 103.407 14 | 97.3 | .05 | 4012109 | .10 | •023705 | 40 | 12.197511 | 1.3 | -•37E-6 | 15 |
| 37676.0 | 109.045 12 | 91.6 | .05 | 4012089 | .07 | •418700 | 32 | 12.197506 | 1.3 | •1E-7 | 13 |
| 37678.0 | 114.687 13 | 86.4 | .06 | 4012066 | .09 | •813687 | 35 | 12.197445 | 2.4 | •6E-7 | 31 |
| 37680.0 | 120.342 16 | 78.9 | .05 | 4012012 | .09 | •208633 | 44 | 12.197444 | 1.6 | -•88E-6 | 13 |
| 37682.0 | 126.036 15 | 72.1 | .06 | 4011978 | .09 | •603476 | 42 | 12.197388 | 1.2 | -•144E-5 | 17 |
| 37684.0 | 131.740 21 | 66.4 | .13 | 4011914 | .12 | •998277 | 57 | 12.197403 | 2.5 | -•166E-5 | 27 |
| 37686.0 | 137.447 15 | 60.7 | .07 | 4011864 | .09 | •393057 | 42 | 12.197364 | 1.3 | -•131E-5 | 13 |
| 37688.0 | 143.178 15 | 56.0 | .04 | 4011799 | .08 | •787762 | 42 | 12.197324 | 1.1 | -•90E-6 | 12 |
| 37690.0 | 148.913 14 | 47.6 | .03 | 4011735 | .07 | •182455 | 38 | 12.197300 | 1.1 | -•29E-6 | 10 |
| 37692.0 | 154.698 12 | 41.6 | .05 | 4011682 | .05 | •977010 | 32 | 12.197297 | 0.9 | -•41E-6 | 11 |
| 37694.0 | 160.512 12 | 35.6 | .04 | 4011627 | .05 | •971485 | 33 | 12.197244 | 1.0 | -•1145E-5 | 93 |
| 37696.0 | 166.346 12 | 29.4 | .03 | 4011581 | .04 | •365897 | 34 | 12.197155 | 1.1 | -•1132E-5 | 78 |
| 37698.0 | 172.207 14 | 23.4 | .04 | 4011482 | .04 | •760234 | 38 | 12.197088 | 0.9 | -•1596E-5 | 72 |
| 37700.0 | 178.113 17 | 16.7 | .04 | 4011431 | .04 | •154439 | 47 | 12.197027 | 1.0 | -•1594E-5 | 90 |
| 37702.0 | 184.050 19 | 10.6 | .07 | 4011236 | .04 | •548545 | 53 | 12.196966 | 1.1 | -•1069E-5 | 89 |
| 37704.0 | 190.080 18 | 4.7 | .06 | 4011232 | .04 | •942392 | 51 | 12.196911 | 1.1 | -•23E-6 | 10 |
| 37706.0 | 196.130 20 | 35.6 | .04 | 4011201 | .05 | •336183 | 54 | 12.196894 | 1.4 | -•33E-6 | 11 |
| 37708.0 | 202.195 18 | 35.2 | .03 | 4011130 | .04 | •729937 | 48 | 12.196848 | 1.3 | -•64E-6 | 10 |
| 37710.0 | 208.266 16 | 34.5 | .04 | 4011072 | .04 | •123672 | 45 | 12.196795 | 1.0 | -•1409E-5 | 91 |
| 37712.0 | 214.383 13 | 33.9 | .04 | 4011009 | .03 | •517276 | 36 | 12.196748 | 0.9 | -•1829E-5 | 74 |
| 37714.0 | 220.544 13 | 33.3 | .04 | 4010954 | .03 | •910745 | 36 | 12.196699 | 0.9 | -•1678E-5 | 73 |
| 37716.0 | 226.744 17 | 32.7 | .05 | 4010906 | .04 | •304094 | 46 | 12.196653 | 1.1 | -•464E-6 | 90 |
| 37718.0 | 232.962 14 | 32.1 | .04 | 4010855 | .04 | •697395 | 40 | 12.196599 | 0.8 | •73E-7 | 72 |
| 37720.0 | 239.193 16 | 31.4 | .03 | 4010809 | .02 | •090666 | 43 | 12.196556 | 1.0 | •197E-8 | 83 |
| 37722.0 | 245.425 14 | 30.8 | .04 | 4010763 | .03 | •483937 | 38 | 12.196590 | 0.9 | -•7E-8 | 67 |

| T (MD) | w | Ω | 1 | e | M | n | n' | q | N | D | σ | |
|-----------|---------|----------|----------|----|---------|----|---------|----|----------|----|-----------|----|
| 37724.0 | 251.721 | 16 | 302.4366 | 04 | 47.2346 | 03 | .010732 | 04 | .8777038 | 45 | 12.196527 | 07 |
| 37726.0 | 258.006 | 15 | 296.2348 | 03 | 47.2347 | 03 | .010706 | 03 | .270158 | 42 | 12.196530 | 09 |
| 37728.0 | 264.431 | 20 | 290.0335 | 03 | 47.2325 | 03 | .010721 | 04 | .662889 | 56 | 12.196522 | 12 |
| 37730.0 | 270.783 | 18 | 283.8308 | 03 | 47.2315 | 03 | .010723 | 03 | .055816 | 50 | 12.196518 | 11 |
| 37732.0 | 277.098 | 18 | 277.6281 | 03 | 47.2315 | 02 | .010724 | 03 | .468844 | 50 | 12.196511 | 12 |
| 37734.0 | 283.475 | 19 | 271.4248 | 03 | 47.2312 | 02 | .010745 | 03 | .841706 | 53 | 12.196496 | 14 |
| 37736.0 | 289.728 | 20 | 265.2226 | 02 | 47.2311 | 02 | .010757 | 02 | .234909 | 55 | 12.196570 | 16 |
| 37738.0 | 296.037 | 20 | 259.0201 | 02 | 47.2309 | 02 | .010788 | 02 | .627967 | 54 | 12.196669 | 15 |
| 37740.0 | 302.267 | 22 | 252.8172 | 02 | 47.2304 | 02 | .010823 | 02 | .021244 | 61 | 12.196701 | 19 |
| 37742.0 | 308.451 | 28 | 246.6144 | 04 | 47.2301 | 03 | .010859 | 02 | .414645 | 78 | 12.196679 | 27 |
| 37744.0 | 314.662 | 35 | 240.4095 | 04 | 47.2296 | 03 | .010904 | 02 | .807966 | 96 | 12.196640 | 30 |
| 37746.0 | 320.909 | 42 | 234.2064 | 05 | 47.2300 | 05 | .010951 | 02 | .20117 | 12 | 12.196769 | 31 |
| 37748.0 | 326.980 | 41 | 228.0017 | 08 | 47.2294 | 06 | .011003 | 02 | .59487 | 11 | 12.196807 | 53 |
| 37750.0 | 333.064 | 27 | 221.7995 | 06 | 47.2292 | 04 | .011056 | 01 | .988395 | 74 | 12.196925 | 30 |
| 37752.0 | 339.110 | 37 | 215.5984 | 08 | 47.2295 | 05 | .011118 | 02 | .38231 | 10 | 12.196898 | 35 |
| 37754.0 | 345.228 | 40 | 209.3971 | 10 | 47.2304 | 05 | .011180 | 02 | .77590 | 11 | 12.196847 | 42 |
| 37756.0 | 351.253 | 31 | 203.1956 | 07 | 47.2310 | 03 | .011242 | 02 | .169742 | 85 | 12.196926 | 29 |
| 37758.0 | 357.250 | 33 | 196.9928 | 07 | 47.2310 | 03 | .011309 | 02 | .563648 | 91 | 12.197035 | 32 |
| 37760.0 | 3.151 | 26 | 190.7898 | 05 | 47.2308 | 02 | .011374 | 02 | .957817 | 73 | 12.197043 | 32 |
| 37762.0 | 9.076 | 21 | 184.5881 | 04 | 47.2306 | 02 | .011443 | 01 | .351917 | 60 | 12.197038 | 21 |
| 37764.0 | 15.006 | 21 | 178.3866 | 05 | 47.2302 | 02 | .011513 | 01 | .746014 | 59 | 12.197079 | 21 |
| 37766.0 | 20.903 | 20 | 172.1858 | 04 | 47.2296 | 02 | .011580 | 01 | .140212 | 56 | 12.197189 | 19 |
| 37768.0 | 26.745 | 17 | 165.9840 | 03 | 47.2292 | 02 | .011645 | 01 | .534568 | 47 | 12.197229 | 16 |
| 37770.0 | 32.534 | 22 | 159.7823 | 04 | 47.2289 | 02 | .011706 | 02 | .929063 | 62 | 12.197271 | 22 |
| 37772.0 | 38.216 | 26 | 153.5786 | 04 | 47.2294 | 03 | .011755 | 02 | .323856 | 71 | 12.197279 | 20 |
| 37774.0 | 43.959 | 27 | 147.3754 | 04 | 47.2287 | 03 | .011808 | 02 | .718478 | 73 | 12.197361 | 24 |
| 37776.0 | 49.681 | 21 | 141.1711 | 03 | 47.2286 | 02 | .011853 | 02 | .113162 | 58 | 12.197286 | 24 |
| 37778.0 | 55.418 | 17 | 134.9675 | 03 | 47.2284 | 02 | .011897 | 02 | .507813 | 45 | 12.197312 | 23 |
| 37780.0 | 61.060 | 16 | 128.7652 | 03 | 47.2286 | 02 | .011940 | 02 | .902732 | 44 | 12.197409 | 17 |
| 37782.0 | 66.689 | 13 | 122.5632 | 03 | 47.2286 | 02 | .011972 | 02 | .297685 | 35 | 12.197505 | 13 |
| 37784.0 | 72.260 | 12 | 116.3610 | 03 | 47.2288 | 02 | .012009 | 02 | .692795 | 33 | 12.197442 | 15 |

Satellite 1960 Iota 2

2 May - 29 June 1962

| T (MJD) | w | Ω | i | e | M | n | n'/2 | q | N | D | σ |
|------------|-------------|-------------|------------|------------|------------|--------------|--------------|--------------|---|------|---|
| 37786.0 | 77.866 11 | 110.1578 03 | 47.2288 02 | .012037 03 | .087814 30 | 12.197468 11 | -.231E-6 61 | 7.875388 195 | 8 | 5.32 | |
| 37788.0 | 83.496 11 | 103.9540 03 | 47.2288 02 | .012051 03 | .482765 30 | 12.197456 10 | -.503E-6 79 | 7.875284 196 | 8 | 5.30 | |
| 37790.0 | 89.129 11 | 97.7508 03 | 47.2300 02 | .012057 03 | .877699 31 | 12.197466 09 | .85E-7 75 | 7.875227 191 | 8 | 5.33 | |
| 37792.0 | 94.749 11 | 91.5479 03 | 47.2302 02 | .012054 03 | .272672 30 | 12.197477 09 | .914E-6 74 | 7.875248 185 | 8 | 4.94 | |
| 37794.0 | 100.388 11 | 85.3453 03 | 47.2305 02 | .012043 03 | .667600 29 | 12.197475 08 | .668E-6 69 | 7.875338 171 | 8 | 4.49 | |
| 37796.0 | 106.002 11 | 79.1435 04 | 47.2309 02 | .012026 03 | .062604 29 | 12.197469 08 | -.13E-7 75 | 7.875475 150 | 8 | 4.18 | |
| 37798.0 | 111.6119 96 | 72.9617 04 | 47.2316 02 | .012003 03 | .457623 26 | 12.197451 08 | .4532E-6 68 | 7.875470 98 | 8 | 3.23 | |
| 37800.0 | 117.275 11 | 66.7401 05 | 47.2319 02 | .011973 04 | .852489 30 | 12.197451 09 | -.117E-5 10 | 7.875399 81 | 8 | 3.12 | |
| 37802.0 | 122.960 10 | 60.5392 03 | 47.2321 02 | .011930 04 | .247287 29 | 12.197387 07 | -.970E-6 63 | 7.876278 68 | 8 | 2.70 | |
| 37804.0 | 128.644 16 | 54.3378 06 | 47.2323 03 | .011891 06 | .642080 45 | 12.197385 09 | .30E-6 12 | 7.876590 73 | 8 | 4.10 | |
| 37806.0 | 134.345 17 | 48.1364 07 | 47.2323 04 | .011843 06 | .036832 48 | 12.197363 12 | .105E-5 10 | 7.876977 68 | 8 | 4.21 | |
| 37808.0 | 140.077 15 | 41.9342 06 | 47.2322 04 | .011789 05 | .431518 42 | 12.197283 13 | .30E-6 12 | 7.877442 69 | 8 | 3.84 | |
| 37810.0 | 145.821 16 | 35.7317 06 | 47.2322 04 | .011736 06 | .826171 43 | 12.197274 11 | .23E-6 12 | 7.877875 74 | 8 | 3.94 | |
| 37812.0 | 151.565 12 | 29.5290 05 | 47.2333 04 | .011703 04 | .220834 33 | 12.197212 09 | -.1193E-5 95 | 7.878164 51 | 8 | 2.66 | |
| 37814.0 | 157.371 11 | 23.3264 05 | 47.2335 04 | .011646 04 | .615316 31 | 12.197195 09 | -.963E-6 80 | 7.878625 53 | 8 | 2.57 | |
| 37816.0 | 163.214 10 | 17.1235 04 | 47.2337 03 | .011582 04 | .009692 29 | 12.197146 07 | -.717E-6 78 | 7.879154 69 | 8 | 2.90 | |
| 37818.0 | 169.118 10 | 10.9203 04 | 47.2339 03 | .011515 04 | .403897 28 | 12.197104 09 | -.40E-7 76 | 7.879705 61 | 8 | 3.35 | |
| 37820.0 | 175.0313 74 | 4.7178 03 | 47.2340 03 | .011447 03 | .798083 20 | 12.197029 08 | .652E-6 70 | 7.880280 96 | 8 | 2.98 | |
| 37822.0 | 180.9958 66 | 358.5191 02 | 47.2341 02 | .011375 03 | .192138 18 | 12.197008 06 | .735E-6 60 | 7.880862 108 | 8 | 3.16 | |
| 37824.0 | 186.7843 66 | 352.3127 02 | 47.2342 02 | .011302 03 | .586136 18 | 12.196991 07 | .348E-6 74 | 7.881454 104 | 8 | 3.28 | |
| 37826.0 | 193.0133 63 | 346.1107 02 | 47.2343 02 | .011235 03 | .980028 17 | 12.196923 07 | -.628E-6 67 | 7.882015 102 | 8 | 3.14 | |
| 37828.0 | 199.0837 67 | 339.9084 02 | 47.2343 02 | .011166 03 | .373805 18 | 12.196859 07 | -.721E-6 71 | 7.882595 104 | 8 | 3.36 | |
| 37830.0 | 205.1691 60 | 333.7057 03 | 47.2340 03 | .011111 04 | .767538 22 | 12.196827 09 | -.687E-6 85 | 7.883048 88 | 8 | 3.84 | |
| 37832.0 | 211.2944 88 | 327.5022 04 | 47.2332 04 | .011063 05 | .161160 24 | 12.196778 10 | -.39E-7 94 | 7.883447 81 | 8 | 4.12 | |
| 37834.0 | 217.4411 79 | 321.2953 05 | 47.2329 04 | .011010 06 | .554726 22 | 12.196762 08 | .319E-6 83 | 7.883683 71 | 8 | 3.75 | |
| 37836.0 | 223.6359 64 | 315.0949 04 | 47.2320 04 | .010970 05 | .948164 18 | 12.196761 08 | .994E-6 68 | 7.884202 56 | 8 | 2.94 | |
| 37838.0 | 229.8296 68 | 308.8093 05 | 47.2321 05 | .010923 06 | .341616 19 | 12.196691 09 | .689E-6 92 | 7.884404 70 | 8 | 3.26 | |
| 37840.0 | 236.0666 59 | 302.6903 04 | 47.2320 04 | .010890 06 | .734955 16 | 12.196645 08 | -.143E-6 81 | 7.884885 72 | 8 | 2.93 | |
| 37842.0 | 242.3271 58 | 296.4897 05 | 47.2330 04 | .010844 06 | .126230 16 | 12.196615 07 | -.665E-6 74 | 7.885262 67 | 8 | 2.80 | |
| 37844.0 | 248.5967 63 | 290.2889 05 | 47.2334 04 | .010817 07 | .521476 18 | 12.196628 07 | -.525E-6 70 | 7.885475 69 | 8 | 2.99 | |

| T (KJD) | w | Ω | i | e | M | a | n'/2 | q | N | D | σ | |
|------------|----------|----|----------|----|---------|----|---------|----|---------|----|-----------|----|
| 37666.0 | 184.3785 | 42 | 91.1317 | 06 | 38.8215 | 02 | *104805 | 04 | *109622 | 13 | 12.184195 | 10 |
| 37668.0 | 193.9691 | 31 | 83.8706 | 05 | 38.8220 | 02 | *104658 | 02 | *478011 | 09 | 12.184201 | 08 |
| 37670.0 | 203.5689 | 69 | 76.6071 | 11 | 38.8227 | 03 | *104532 | 04 | *846437 | 22 | 12.184244 | 19 |
| 37672.0 | 213.1912 | 92 | 69.3481 | 18 | 38.8235 | 05 | *104434 | 11 | *214812 | 29 | 12.184137 | 27 |
| 37674.0 | 222.8131 | 74 | 62.0875 | 15 | 38.8248 | 07 | *104285 | 08 | *583213 | 22 | 12.184264 | 19 |
| 37676.0 | 232.4229 | 46 | 54.8283 | 08 | 38.8247 | 05 | *104206 | 03 | *951799 | 13 | 12.184313 | 11 |
| 37678.0 | 242.0444 | 47 | 47.5693 | 06 | 38.8257 | 05 | *104148 | 02 | *320485 | 13 | 12.184361 | 10 |
| 37680.0 | 251.6760 | 51 | 40.3101 | 05 | 38.8281 | 05 | *104096 | 02 | *689264 | 15 | 12.184413 | 18 |
| 37682.0 | 261.3025 | 75 | 33.0523 | 05 | 38.8282 | 06 | *104055 | 03 | *058215 | 22 | 12.184509 | 18 |
| 37684.0 | 270.9361 | 50 | 25.7928 | 04 | 38.8272 | 04 | *104020 | 02 | *427308 | 14 | 12.184600 | 13 |
| 37686.0 | 280.5680 | 44 | 18.5340 | 05 | 38.8275 | 04 | *104009 | 03 | *796603 | 13 | 12.184102 | 11 |
| 37688.0 | 290.1917 | 38 | 11.2745 | 06 | 38.8262 | 04 | *103999 | 02 | *166142 | 11 | 12.184829 | 09 |
| 37690.0 | 299.8142 | 27 | 4.0150 | 05 | 38.8257 | 03 | *103996 | 02 | *535918 | 08 | 12.184950 | 08 |
| 37692.0 | 309.4360 | 30 | 356.7549 | 07 | 38.8249 | 02 | *104016 | 01 | *905982 | 09 | 12.185123 | 07 |
| 37694.0 | 319.0514 | 34 | 349.4954 | 06 | 38.8242 | 02 | *104052 | 02 | *276408 | 10 | 12.185301 | 10 |
| 37696.0 | 328.6620 | 35 | 342.2344 | 06 | 38.8236 | 02 | *104116 | 02 | *647201 | 11 | 12.185487 | 08 |
| 37698.0 | 338.2721 | 37 | 334.9721 | 06 | 38.8232 | 02 | *104193 | 02 | *018323 | 11 | 12.185638 | 09 |
| 37700.0 | 347.8869 | 30 | 327.7116 | 05 | 38.8220 | 02 | *104287 | 02 | *389762 | 09 | 12.185822 | 07 |
| 37702.0 | 357.4935 | 28 | 320.4512 | 04 | 38.8212 | 01 | *104393 | 02 | *761669 | 08 | 12.186072 | 07 |
| 37704.0 | 7.0825 | 22 | 313.1882 | 04 | 38.8205 | 01 | *104504 | 02 | *134035 | 07 | 12.186281 | 07 |
| 37706.0 | 16.6593 | 07 | 305.9242 | 01 | 38.8200 | 01 | *104625 | 01 | *506841 | 02 | 12.186501 | 02 |
| 37708.0 | 26.2293 | 12 | 298.6607 | 02 | 38.8194 | 01 | *104746 | 01 | *880075 | 04 | 12.186750 | 03 |
| 37710.0 | 35.7639 | 19 | 291.3959 | 03 | 38.8193 | 02 | *104876 | 02 | *253832 | 06 | 12.187006 | 04 |
| 37712.0 | 45.3385 | 29 | 284.1318 | 04 | 38.8190 | 02 | *104996 | 03 | *628090 | 10 | 12.187274 | 06 |
| 37714.0 | 54.8796 | 14 | 276.8660 | 02 | 38.8184 | 02 | *105100 | 01 | *002967 | 04 | 12.187562 | 04 |
| 37716.0 | 64.4222 | 15 | 269.5987 | 03 | 38.8178 | 02 | *105180 | 02 | *378321 | 05 | 12.187793 | 04 |
| 37718.0 | 73.9485 | 25 | 262.3302 | 04 | 38.8172 | 02 | *105225 | 02 | *754219 | 08 | 12.188079 | 06 |
| 37720.0 | 83.4891 | 18 | 255.0618 | 02 | 38.8170 | 01 | *105248 | 02 | *130579 | 06 | 12.188287 | 07 |
| 37722.0 | 93.0143 | 42 | 247.7908 | 05 | 38.8170 | 02 | *105245 | 03 | *507516 | 14 | 12.188637 | 11 |

| T (MJD) | u | z | 1 | e | M | a | n'/2 | q | N | D | o | |
|------------|----------|----|----------|----|--------|----|-----------|----|-----------|----|-----------|----|
| 37724.0 | 102.5461 | 24 | 240.3217 | 03 | -0.166 | 01 | -0.105212 | 02 | -0.885051 | 08 | 12.188897 | 07 |
| 37726.0 | 112.0879 | 18 | 240.3219 | 03 | -0.166 | 02 | -0.105154 | 01 | -0.263085 | 06 | 12.189135 | 05 |
| 37728.0 | 121.6359 | 31 | 240.3211 | 01 | -0.166 | 02 | -0.105076 | 02 | -0.641579 | 10 | 12.189356 | 10 |
| 37730.0 | 131.1858 | 53 | 240.3209 | 04 | -0.166 | 03 | -0.104976 | 03 | -0.020476 | 16 | 12.189551 | 13 |
| 37732.0 | 140.7435 | 48 | 240.3212 | 07 | -0.166 | 04 | -0.104871 | 03 | -0.399682 | 15 | 12.189667 | 11 |
| 37734.0 | 150.2989 | 44 | 240.3215 | 06 | -0.166 | 03 | -0.104757 | 02 | -0.779141 | 13 | 12.189799 | 13 |
| 37736.0 | 159.8709 | 42 | 160.3071 | 07 | -0.166 | 03 | -0.104650 | 02 | -0.158839 | 12 | 12.189927 | 09 |
| 37738.0 | 169.4606 | 37 | 160.3069 | 06 | -0.166 | 02 | -0.104595 | 02 | -0.538808 | 11 | 12.190068 | 09 |
| 37740.0 | 179.0520 | 28 | 160.3070 | 04 | -0.166 | 01 | -0.104471 | 01 | -0.919118 | 08 | 12.190232 | 07 |
| 37742.0 | 188.6606 | 52 | 170.3089 | 08 | -0.166 | 03 | -0.104391 | 04 | -0.299804 | 15 | 12.190462 | 13 |
| 37744.0 | 198.2671 | 34 | 160.3034 | 06 | -0.166 | 02 | -0.104398 | 02 | -0.681068 | 10 | 12.190782 | 08 |
| 37746.0 | 207.8885 | 30 | 160.3047 | 05 | -0.166 | 02 | -0.104275 | 02 | -0.063045 | 10 | 12.191185 | 07 |
| 37748.0 | 217.5107 | 44 | 193.2941 | 08 | -0.166 | 03 | -0.104239 | 03 | -0.445810 | 14 | 12.191575 | 10 |
| 37750.0 | 227.1377 | 48 | 160.6023 | 08 | -0.166 | 04 | -0.104234 | 04 | -0.829382 | 15 | 12.191989 | 12 |
| 37752.0 | 236.7602 | 42 | 130.7535 | 09 | -0.166 | 03 | -0.104234 | 04 | -0.213720 | 13 | 12.192370 | 11 |
| 37754.0 | 246.3751 | 49 | 131.0626 | 07 | -0.166 | 03 | -0.104248 | 04 | -0.598821 | 15 | 12.192739 | 10 |
| 37756.0 | 255.9900 | 44 | 120.4209 | 04 | -0.166 | 02 | -0.104269 | 03 | -0.984554 | 13 | 12.192997 | 11 |
| 37758.0 | 265.6275 | 43 | 136.1936 | 04 | -0.166 | 02 | -0.104304 | 03 | -0.370780 | 14 | 12.193230 | 11 |
| 37760.0 | 275.2757 | 42 | 109.9462 | 04 | -0.166 | 02 | -0.104341 | 03 | -0.757456 | 14 | 12.193438 | 10 |
| 37762.0 | 284.8915 | 38 | 102.6367 | 04 | -0.166 | 02 | -0.104380 | 03 | -0.144681 | 12 | 12.193724 | 14 |
| 37764.0 | 294.5321 | 27 | 95.1136 | 03 | -0.166 | 02 | -0.104413 | 02 | -0.532269 | 09 | 12.193888 | 06 |
| 37766.0 | 304.1599 | 21 | 87.9340 | 03 | -0.166 | 02 | -0.104456 | 01 | -0.920312 | 07 | 12.194139 | 06 |
| 37768.0 | 313.7763 | 22 | 80.4636 | 03 | -0.166 | 02 | -0.104502 | 02 | -0.308840 | 07 | 12.194386 | 05 |
| 37770.0 | 323.4027 | 36 | 73.2901 | 06 | -0.166 | 03 | -0.104593 | 02 | -0.697849 | 11 | 12.194670 | 09 |
| 37772.0 | 333.0211 | 40 | 64.0154 | 05 | -0.166 | 02 | -0.104613 | 02 | -0.087561 | 12 | 12.195059 | 11 |
| 37774.0 | 342.6321 | 27 | 34.1139 | 04 | -0.166 | 02 | -0.104677 | 02 | -0.478108 | 08 | 12.195452 | 08 |
| 37776.0 | 352.2622 | 50 | 51.6463 | 06 | -0.166 | 03 | -0.104737 | 03 | -0.869366 | 15 | 12.195876 | 11 |
| 37778.0 | 1.8511 | 73 | 44.2187 | 10 | -0.166 | 04 | -0.104839 | 03 | -0.261051 | 21 | 12.196353 | 20 |
| 37780.0 | 11.4627 | 23 | 36.9101 | 04 | -0.166 | 04 | -0.104916 | 01 | -0.654645 | 07 | 12.196672 | 05 |
| 37782.0 | 21.0458 | 34 | 29.4319 | 06 | -0.166 | 02 | -0.105018 | 02 | -0.048347 | 10 | 12.196987 | 08 |
| 37784.0 | 30.6321 | 29 | 22.3526 | 05 | -0.166 | 02 | -0.105128 | 02 | -0.442602 | 08 | 12.197255 | 07 |

Satellite 1961 Delta 1

2 May - 29 June 1962

| T (MD) | w | Q | C | I | e | M | n | N | D | G |
|-----------|----------|----|----------|----|---------|----|---------|----|---------|----|
| | | | | | | | n'/2 | | | |
| 37786.0 | 40.2108 | 31 | 15.0734 | 07 | 38.8210 | 03 | 0103249 | 02 | +837369 | 09 |
| 37786.0 | 49.7807 | 39 | 7.7925 | 11 | 38.8204 | 03 | 0105369 | 03 | +232652 | 12 |
| 37790.0 | 59.3471 | 32 | .5120 | 09 | 38.8199 | 03 | 0105478 | 03 | +628410 | 10 |
| 37792.0 | 68.9078 | 26 | 353.2305 | 05 | 38.8196 | 03 | 0105564 | 02 | +024654 | 08 |
| 37794.0 | 78.4592 | 14 | 345.9497 | 03 | 38.8188 | 01 | 0105632 | 01 | +421453 | 04 |
| 37796.0 | 88.0082 | 23 | 338.6663 | 04 | 38.8198 | 03 | 0105696 | 02 | +818727 | 07 |
| 37798.0 | 97.5515 | 24 | 331.3845 | 03 | 38.8198 | 03 | 0105744 | 02 | +216540 | 07 |
| 37800.0 | 107.1005 | 20 | 324.1011 | 03 | 38.8197 | 02 | 0105778 | 02 | +614948 | 06 |
| 37802.0 | 116.6535 | 18 | 316.8164 | 02 | 38.8202 | 02 | 0105804 | 02 | +013979 | 05 |
| 37804.0 | 126.2163 | 16 | 309.5310 | 03 | 38.8206 | 02 | 0105809 | 02 | +413635 | 05 |
| 37806.0 | 135.7885 | 18 | 302.2058 | 04 | 38.8209 | 03 | 0105796 | 02 | +013887 | 05 |
| 37808.0 | 145.3629 | 21 | 294.9594 | 06 | 38.8204 | 03 | 0105780 | 03 | +214788 | 06 |
| 37810.0 | 154.9433 | 17 | 287.6723 | 05 | 38.8204 | 02 | 0105761 | 02 | +616339 | 05 |
| 37812.0 | 164.5346 | 22 | 280.3858 | 05 | 38.8208 | 03 | 0105741 | 03 | +010490 | 07 |
| 37814.0 | 174.1216 | 27 | 273.0985 | 06 | 38.8223 | 03 | 0105727 | 03 | +421383 | 08 |
| 37816.0 | 183.7231 | 36 | 265.8110 | 08 | 38.8239 | 04 | 0105733 | 05 | +824957 | 11 |
| 37818.0 | 193.3376 | 27 | 256.5228 | 06 | 38.8248 | 03 | 0105759 | 04 | +229265 | 08 |
| 37820.0 | 202.9476 | 13 | 251.2333 | 03 | 38.8252 | 01 | 0105792 | 02 | +634332 | 04 |
| 37822.0 | 212.5618 | 16 | 243.9424 | 03 | 38.8257 | 01 | 0105826 | 03 | +040160 | 05 |
| 37824.0 | 222.1797 | 18 | 236.6507 | 03 | 38.8265 | 02 | 0105877 | 03 | +446761 | 06 |
| 37826.0 | 231.7890 | 12 | 229.3576 | 03 | 38.8275 | 01 | 0105921 | 03 | +854119 | 04 |
| 37828.0 | 241.4082 | 13 | 222.0648 | 03 | 38.8287 | 01 | 0106004 | 03 | +262240 | 05 |
| 37830.0 | 251.0293 | 14 | 214.7704 | 04 | 38.8291 | 02 | 0106097 | 04 | +671046 | 05 |
| 37832.0 | 260.6447 | 10 | 207.4741 | 04 | 38.8281 | 02 | 0106178 | 03 | +080439 | 04 |
| 37834.0 | 270.2643 | 09 | 200.1771 | 03 | 38.8275 | 01 | 0106277 | 03 | +490244 | 03 |
| 37836.0 | 279.8810 | 12 | 192.8783 | 04 | 38.8276 | 01 | 0106353 | 03 | +900467 | 04 |
| 37838.0 | 289.4897 | 25 | 185.5810 | 04 | 38.8290 | 02 | 0106431 | 04 | +311107 | 08 |
| 37840.0 | 299.1235 | 19 | 178.2833 | 04 | 38.8297 | 02 | 0106512 | 02 | +722068 | 07 |
| 37842.0 | 308.7568 | 16 | 170.9856 | 04 | 38.8294 | 02 | 0106571 | 02 | +133385 | 06 |
| 37844.0 | 318.3776 | 18 | 163.6868 | 03 | 38.8295 | 01 | 0106539 | 02 | +545104 | 06 |

| T (MD) | ω | ϵ | η | N | α | $\alpha'/2$ | η | N D S |
|-----------|-------------|--------------|----------|------------|------------|--------------|-------------|---------------------|
| 37522.0 | 265.0233 82 | 352.09172 07 | 0.174 10 | .007800 15 | .43067 23 | 13.869843 00 | .670E-6 40 | 7.261160 36 12 3.19 |
| 37524.0 | 263.0336 99 | 348.0663 C8 | 0.156 10 | .007795 15 | .17028 28 | 13.869845 00 | .652E-6 40 | 7.261192 39 12 3.65 |
| 37526.0 | 262.053 21 | 349.0127 17 | 0.120 18 | .007803 25 | .9C963 60 | 13.869849 00 | .61E-6 11 | 7.261135 29 12 3.69 |
| 37528.0 | 260.082 25 | 350.03578 22 | 0.169 22 | .007772 28 | .64941 71 | 13.869849 01 | -.87E-7 97 | 7.261360 27 12 3.68 |
| 37530.0 | 259.088 29 | 353.05049 27 | 0.164 25 | .007817 3C | .38848 82 | 13.869848 00 | -.106E-5 20 | 7.261028 21 12 2.35 |
| 37532.0 | 256.097 78 | 328.0476 91 | 0.190 79 | .007673 68 | .1324 22 | 13.869843 01 | .105E-5 12 | 7.262089 16 12 4.53 |
| 37548.0 | 246.0469 43 | 289.0761 01 | 0.143 04 | .007791 08 | .04780 12 | 13.869864 01 | -.17E-6 15 | 7.261219 57 12 6.77 |
| 37550.0 | 244.0980 40 | 289.0263 03 | 0.143 03 | .007798 07 | .78755 11 | 13.869867 00 | .785E-6 61 | 7.261165 67 12 6.51 |
| 37552.0 | 243.739 37 | 280.01767 03 | 0.149 04 | .007837 C5 | .52677 11 | 13.869871 00 | .114E-5 69 | 7.260878 66 12 7.48 |
| 37554.0 | 242.407 32 | 273.02272 03 | 0.151 04 | .007842 C3 | .266265 90 | 13.869876 00 | .1166E-5 64 | 7.260840 57 12 5.99 |
| 37556.0 | 240.928 36 | 270.04763 03 | 0.153 04 | .007850 C4 | .00619 11 | 13.869878 00 | .914E-6 59 | 7.260780 49 12 5.57 |
| 37558.0 | 239.394 40 | 268.03260 04 | 0.152 03 | .007861 04 | .74627 11 | 13.869882 00 | .835E-6 37 | 7.260699 47 12 5.76 |
| 37560.0 | 238.019 39 | 269.03762 01 | 0.151 03 | .007864 04 | .48591 11 | 13.869885 01 | .436E-6 78 | 7.260677 43 12 5.73 |
| 37562.0 | 236.636 42 | 258.04261 03 | 0.151 04 | .007862 05 | .22558 12 | 13.869885 00 | -.106E-6 76 | 7.260690 39 12 6.10 |
| 37564.0 | 235.238 40 | 251.00757 C7 | 0.151 04 | .007862 07 | .96529 11 | 13.869882 01 | -.53E-6 19 | 7.260693 31 12 5.40 |
| 37566.0 | 233.751 45 | 246.02270 C3 | 0.151 03 | .007809 17 | .70522 12 | 13.869881 01 | .49E-6 10 | 7.261080 29 12 4.84 |
| 37568.0 | 232.374 57 | 241.03755 03 | 0.151 05 | .007844 10 | .44469 16 | 13.869883 00 | .1070E-5 73 | 7.260825 26 12 4.18 |
| 37570.0 | 231.026 51 | 236.03247 C3 | 0.151 05 | .007860 C7 | .18447 14 | 13.869887 00 | .1033E-5 59 | 7.260705 22 12 2.90 |
| 37572.0 | 228.79 21 | 231.03754 13 | 0.151 04 | .007821 11 | .92651 57 | 13.869893 01 | .923E-6 63 | 7.260990 24 12 5.01 |

Satellite 1961 Omicron 1

1 November - 31 December 1961

| T (WJD) | u | v | w | a | e | i | X | Y | Z | n ^{1/2} | q. | N | S | C |
|------------|---------|----|----------|----|---------|----|---------|----|----------|------------------|-----------|----|----------|----|
| 37604.0 | 206.327 | 84 | 194.6851 | 34 | 66.0124 | 56 | .007916 | 09 | .76310 | 23 | 13.869910 | 01 | .96E-6 | 18 |
| 37606.0 | 204.996 | 87 | 149.2398 | 36 | 66.0121 | 66 | .007916 | 09 | .52272 | 24 | 13.869914 | 01 | .212E-5 | 14 |
| 37608.0 | 203.416 | 62 | 144.6385 | 04 | 66.0116 | 87 | .037929 | 05 | .24304 | 16 | 13.869925 | 01 | .147E-5 | 10 |
| 37610.0 | 201.987 | 92 | 139.5136 | 31 | 66.0119 | 66 | .007931 | 09 | .98296 | 15 | 13.869942 | 01 | .346E-6 | 64 |
| 37612.0 | 200.637 | 55 | 134.6887 | 71 | 66.0112 | 56 | .007945 | 06 | .72267 | 15 | 13.869922 | 01 | -.76E-6 | 19 |
| 37614.0 | 199.256 | 59 | 129.8596 | 55 | 66.0105 | 37 | .007996 | 07 | .46243 | 16 | 13.869921 | 01 | .99E-6 | 19 |
| 37616.0 | 197.876 | 55 | 124.6884 | 34 | 66.0114 | 96 | .007996 | 06 | .20223 | 15 | 13.869921 | 01 | .575E-6 | 96 |
| 37618.0 | 196.507 | 38 | 150.6138 | 02 | 66.0124 | 94 | .008004 | 23 | .94197 | 11 | 13.869922 | 00 | .402E-6 | 75 |
| 37620.0 | 195.174 | 43 | 115.2884 | 03 | 66.0126 | 03 | .008013 | 04 | .68162 | 12 | 13.869921 | 00 | .301E-6 | 46 |
| 37622.0 | 193.835 | 37 | 116.4383 | 32 | 66.0133 | 93 | .008016 | 03 | .42130 | 19 | 13.869921 | 00 | .589E-6 | 88 |
| 37624.0 | 192.440 | 38 | 166.5805 | 93 | 66.0136 | 63 | .008019 | 03 | .16114 | 11 | 13.869921 | 00 | .303E-6 | 48 |
| 37626.0 | 191.041 | 43 | 106.7385 | 03 | 66.0137 | 64 | .008027 | 04 | .90099 | 13 | 13.869915 | 00 | .93E-7 | 69 |
| 37628.0 | 189.631 | 45 | 85.6802 | 64 | 66.0143 | 64 | .008027 | 04 | .66408 | 12 | 13.869918 | 00 | .22E-6 | 17 |
| 37630.0 | 188.324 | 57 | 91.7386 | 10 | 66.0185 | 56 | .008037 | 07 | .43664 | 16 | 13.869917 | 01 | .445E-6 | 57 |
| 37632.0 | 186.966 | 72 | 86.1936 | 11 | 66.0162 | 16 | .008031 | 10 | .61202 | 20 | 13.869917 | 01 | .84E-6 | 12 |
| 37634.0 | 185.793 | 30 | 81.3442 | 33 | 66.0138 | 32 | .008070 | 58 | .05945 | 85 | 13.869921 | 01 | .754E-6 | 84 |
| 37636.0 | 184.512 | 24 | 76.4577 | 29 | 66.0111 | 28 | .008089 | 39 | .58899 | 69 | 13.869921 | 01 | .530E-6 | 62 |
| 37638.0 | 182.902 | 22 | 71.6526 | 21 | 66.0090 | 22 | .008051 | 31 | .33944 | 62 | 13.869921 | 01 | .2E-7 | 15 |
| 37640.0 | 181.502 | 22 | 66.8903 | 21 | 66.0099 | 22 | .008053 | 30 | .37931 | 62 | 13.869922 | 01 | .62E-6 | 14 |
| 37642.0 | 179.941 | 18 | 61.6963 | 12 | 66.0152 | 14 | .008030 | 16 | .81986 | 39 | 13.869923 | 00 | .54CE-6 | 44 |
| 37644.0 | 178.561 | 14 | 57.0961 | 13 | 66.0161 | 14 | .008037 | 16 | .55951 | 46 | 13.869925 | 00 | .301E-6 | 47 |
| 37646.0 | 177.381 | 14 | 52.6245 | 11 | 66.0174 | 13 | .008038 | 14 | .29883 | 35 | 13.869924 | 00 | .172E-6 | 41 |
| 37648.0 | 176.111 | 15 | 47.3965 | 11 | 66.0179 | 14 | .008010 | 14 | .03031 | 41 | 13.869922 | 00 | -.175E-6 | 66 |
| 37650.0 | 174.395 | 22 | 42.5477 | 08 | 66.0159 | 10 | .008043 | 04 | .779100 | 63 | 13.869920 | 00 | -.78E-7 | 55 |
| 37652.0 | 173.036 | 21 | 37.7782 | 07 | 66.0134 | 69 | .008047 | 03 | .510894 | 59 | 13.869918 | 00 | .159E-6 | 46 |
| 37654.0 | 171.477 | 28 | 32.8846 | 07 | 66.0197 | 09 | .008059 | 07 | .0259227 | 79 | 13.869917 | 01 | .54E-7 | 70 |
| 37656.0 | 170.131 | 21 | 27.6959 | 05 | 66.0174 | 07 | .008047 | 05 | .998973 | 99 | 13.869916 | 01 | .353E-6 | 58 |
| 37658.0 | 168.760 | 18 | 23.6146 | 04 | 66.0171 | 03 | .008045 | 05 | .738790 | 49 | 13.869917 | 00 | .303E-6 | 77 |
| 37660.0 | 167.382 | 16 | 18.2977 | 03 | 66.0164 | 04 | .008054 | 04 | .478836 | 44 | 13.869916 | 00 | .216E-6 | 62 |
| 37662.0 | 166.072 | 11 | 13.6449 | 02 | 66.0165 | 03 | .008057 | 03 | .216293 | 31 | 13.869993 | 00 | .216E-6 | 27 |
| 37664.0 | 164.635 | 13 | 8.5992 | 02 | 66.0163 | 53 | .008059 | 04 | .956300 | 37 | 13.869993 | 00 | .203E-6 | 46 |

| T (MD) | E | n | i | e | M | n | $\alpha^{1/2}$ | q | N | D | o |
|-----------|------------|--------------|------------|------------|------------|--------------|----------------|----------|-------|------|---|
| 37666.0 | 163.297 13 | 3.7498 02 | 66.8164 03 | .008072 04 | .698042 35 | 13.869892 00 | .0424E-6 48 | 7.259147 | 79 12 | 5.40 | |
| 37668.0 | 161.964 14 | 358.9035 02 | 66.8165 03 | .008083 04 | .437770 36 | 13.869895 00 | .74E-6 10 | 7.259066 | 62 12 | 4.72 | |
| 37670.0 | 160.602 12 | 354.0521 02 | 66.8167 03 | .008089 03 | .177587 32 | 13.869896 00 | .50E-7 50 | 7.259023 | 44 12 | 3.35 | |
| 37672.0 | 159.231 13 | 349.2013 02 | 66.8169 03 | .008091 03 | .917434 37 | 13.869894 00 | -.587E-6 60 | 7.259007 | 40 12 | 3.18 | |
| 37674.0 | 157.801 24 | 344.3516 03 | 66.8174 06 | .008107 04 | .657426 66 | 13.869884 01 | .95E-7 63 | 7.259894 | 26 12 | 3.60 | |
| 37676.0 | 156.622 24 | 339.5013 01 | 66.8164 02 | .008086 05 | .396728 66 | 13.869892 00 | .1181E-5 91 | 7.259049 | 22 12 | .72 | |
| 37678.0 | 154.66 10 | 334.6521 08 | 66.8156 12 | .008188 23 | .138117 28 | 13.869894 00 | .394E-5 29 | 7.258303 | 40 12 | 4.13 | |
| 37680.0 | 153.35 11 | 329.8014 09 | 66.8149 12 | .008194 26 | .877889 30 | 13.869901 00 | .108E-5 10 | 7.258256 | 47 12 | 4.86 | |
| 37682.0 | 151.86 11 | 324.9517 09 | 66.8147 13 | .008233 26 | .61807 28 | 13.869899 00 | -.229E-6 62 | 7.257972 | 49 12 | 5.36 | |
| 37684.0 | 150.62 14 | 320.1025 13 | 66.8152 16 | .008206 39 | .35798 38 | 13.869894 00 | -.34E-6 10 | 7.258171 | 45 12 | 5.74 | |
| 37686.0 | 148.99 18 | 315.2567 26 | 66.8171 31 | .008287 55 | .09813 48 | 13.86992 01 | .88E-6 25 | 7.257576 | 36 12 | 4.79 | |
| 37688.0 | 147.89 20 | 310.4043 27 | 66.8157 32 | .008195 64 | .83729 53 | 13.869893 01 | .726E-6 84 | 7.258251 | 30 12 | 6.75 | |
| 37690.0 | 146.12 12 | 305.5598 23 | 66.8213 25 | .008357 52 | .57022 32 | 13.869900 01 | .573E-6 71 | 7.257060 | 16 12 | 2.92 | |
| 37704.0 | 137.130 44 | 271.6113 03 | 66.8138 04 | .008171 06 | .75584 12 | 13.869924 01 | -.42E-6 13 | 7.258411 | 60 12 | 6.16 | |
| 37706.0 | 135.775 40 | 266.7618 03 | 66.8137 34 | .008174 05 | .49570 11 | 13.869922 01 | -.84E-7 78 | 7.258392 | 63 12 | 5.89 | |
| 37708.0 | 134.437 39 | 261.9121 03 | 66.8137 34 | .008179 06 | .23552 11 | 13.869921 00 | -.106E-6 55 | 7.258359 | 66 12 | 6.02 | |
| 37710.0 | 133.073 43 | 257.03624 03 | 66.8138 04 | .008186 06 | .97541 12 | 13.869920 01 | -.19E-6 13 | 7.258308 | 61 12 | 6.18 | |
| 37712.0 | 131.641 31 | 252.2127 03 | 66.8132 05 | .008200 04 | .715480 85 | 13.869921 01 | .650E-6 75 | 7.258201 | 61 12 | 6.90 | |
| 37714.0 | 130.370 37 | 247.3634 04 | 66.8118 06 | .008215 05 | .45512 10 | 13.869924 01 | .744E-6 86 | 7.258090 | 44 12 | 6.23 | |
| 37716.0 | 128.941 30 | 242.5133 03 | 66.8121 04 | .008211 04 | .195203 83 | 13.869927 01 | .504E-6 43 | 7.258118 | 58 12 | 5.44 | |
| 37718.0 | 127.540 33 | 237.6630 03 | 66.8125 04 | .008208 04 | .935221 93 | 13.869926 01 | -.317E-6 94 | 7.258141 | 68 12 | 6.24 | |
| 37720.0 | 126.243 31 | 232.8137 03 | 66.8120 04 | .008212 04 | .67494C 87 | 13.869922 01 | .1E-7 14 | 7.258112 | 70 12 | 6.32 | |
| 37722.0 | 124.901 29 | 227.9638 03 | 66.8123 04 | .008217 04 | .414785 82 | 13.869923 01 | .428E-6 50 | 7.258079 | 84 12 | 6.55 | |

| T (MD) | w | Ω | i | e | M | n | n'/2 | q | N | D | σ |
|-----------|------------|-------------|------------|------------|------------|--------------|-------------|-------------|----|------|---|
| 37724.0 | 123.728 44 | 223.1142 03 | 66.8124 04 | .008198 06 | .15416 12 | 13.869925 00 | .931E-6 74 | 7.258216 74 | 12 | 6.52 | |
| 37726.0 | 122.373 42 | 218.2642 03 | 66.8132 04 | .008203 07 | .89405 12 | 13.869928 01 | .847E-6 71 | 7.258179 82 | 12 | 7.33 | |
| 37728.0 | 121.036 44 | 213.4144 04 | 66.8132 06 | .008189 11 | .63390 12 | 13.869931 01 | .666E-6 17 | 7.258282 58 | 12 | 7.62 | |
| 37730.0 | 119.671 44 | 208.5674 10 | 66.8170 13 | .008201 17 | .37383 12 | 13.869934 01 | .447E-6 65 | 7.258191 67 | 12 | 6.84 | |
| 37732.0 | 118.236 65 | 203.7198 17 | 66.8196 20 | .008131 38 | .11394 17 | 13.869931 01 | .77E-6 20 | 7.258704 39 | 12 | 6.72 | |
| 37734.0 | 103.22 17 | 150.3800 16 | 66.8126 16 | .008255 17 | .25393 47 | 13.869984 01 | -.609E-6 73 | 7.257782 42 | 12 | 3.99 | |
| 37736.0 | 101.87 16 | 145.5282 13 | 66.8126 15 | .008247 21 | .99348 47 | 13.869979 01 | -.374E-6 70 | 7.257839 44 | 12 | 3.92 | |
| 37738.0 | 100.690 39 | 140.6779 03 | 66.8121 05 | .008230 09 | .73293 11 | 13.869980 01 | .758E-6 52 | 7.257960 51 | 12 | 4.36 | |
| 37740.0 | 99.205 42 | 135.8276 03 | 66.8123 06 | .008215 12 | .47324 12 | 13.869981 01 | .533E-6 66 | 7.258072 47 | 12 | 4.97 | |
| 37742.0 | 97.965 34 | 130.9776 03 | 66.8114 06 | .008249 07 | .212891 95 | 13.869990 01 | -.240E-6 65 | 7.257821 50 | 12 | 5.86 | |
| 37744.0 | 96.632 38 | 126.1278 03 | 66.8116 05 | .008246 08 | .95279 11 | 13.869984 01 | -.35E-6 10 | 7.257846 49 | 12 | 6.58 | |
| 37746.0 | 95.232 37 | 121.2785 04 | 66.8112 05 | .008284 09 | .69288 10 | 13.869979 01 | .21E-6 12 | 7.257970 45 | 12 | 6.88 | |
| 37748.0 | 93.959 46 | 116.4293 05 | 66.8112 05 | .008288 05 | .43260 13 | 13.869984 01 | .666E-6 21 | 7.257539 43 | 12 | 6.79 | |
| 37750.0 | 92.364 63 | 111.5796 06 | 66.8109 07 | .008275 07 | .17323 17 | 13.869990 01 | .139E-5 22 | 7.257631 41 | 12 | 8.37 | |
| 37752.0 | 91.033 30 | 106.7305 04 | 66.8124 05 | .008278 07 | .91316 83 | 13.869994 01 | .81E-6 11 | 7.257607 43 | 12 | 6.04 | |
| 37754.0 | 89.640 28 | 101.8804 03 | 66.8128 04 | .008271 06 | .653222 77 | 13.869995 01 | .563E-6 62 | 7.257661 44 | 12 | 5.55 | |
| 37756.0 | 88.326 19 | 97.0304 03 | 66.8134 03 | .008255 05 | .393095 53 | 13.869996 01 | .491E-6 62 | 7.257778 44 | 12 | 4.38 | |
| 37758.0 | 86.986 14 | 92.1797 02 | 66.8143 03 | .008239 06 | .133045 39 | 13.869998 01 | .688E-6 74 | 7.257891 46 | 12 | 3.46 | |
| 37760.0 | 85.625 14 | 87.3303 03 | 66.8146 03 | .008244 05 | .873051 40 | 13.870001 01 | .81E-6 14 | 7.257851 44 | 12 | 3.32 | |
| 37762.0 | 84.256 15 | 82.4810 05 | 66.8146 03 | .008245 07 | .613089 41 | 13.870006 01 | -.197E-6 99 | 7.257847 42 | 12 | 3.29 | |
| 37764.0 | 82.950 15 | 77.6305 07 | 66.8145 03 | .008256 10 | .352944 44 | 13.870001 01 | -.47E-6 31 | 7.257763 34 | 12 | 2.68 | |

| T (MTD) | w | 0 | 1 | 2 | M | n | n'/2 | q | N | D | G |
|------------|-----------|-------------|------------|------------|-------------|--------------|-------------|----------|-------|------|---|
| 37798.0 | 81.643 26 | 72.7810 20 | 66.0144 07 | .008271 26 | .092803 72 | 13.070007 01 | .247E-5 15 | 7.257654 | 24 12 | 2.96 | |
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| 37806.0 | 68.058 57 | 24.3934 10 | 66.0136 13 | .008145 36 | .049338 15 | 13.070050 02 | .1372E-5 79 | 7.258562 | 53 12 | 4.49 | |
| 37808.0 | 66.618 46 | 19.4438 10 | 66.0121 15 | .008227 14 | .023366 13 | 13.070050 01 | .709E-6 53 | 7.257961 | 48 12 | 5.41 | |
| 37810.0 | 65.026 42 | 14.5942 06 | 66.0126 10 | .008187 13 | .097330 11 | 13.069974 02 | -.89E-7 70 | 7.258283 | 46 12 | 4.18 | |
| 37812.0 | 64.064 14 | 9.7435 02 | 66.0130 04 | .008226 02 | .0713392 40 | 13.069976 00 | .335E-7 23 | 7.257991 | 38 12 | 1.68 | |
| 37814.0 | 62.769 26 | 4.0927 03 | 66.0143 05 | .008229 02 | .0453303 72 | 13.069979 00 | .242E-6 36 | 7.257998 | 48 12 | 3.08 | |
| 37816.0 | 61.419 20 | .0426 02 | 66.0148 03 | .008223 02 | .0193368 57 | 13.069981 00 | .373E-6 33 | 7.258012 | 66 12 | 3.33 | |
| 37818.0 | 60.106 19 | 355.1925 02 | 66.0149 03 | .008226 01 | .0933334 52 | 13.069984 00 | .161E-6 37 | 7.257990 | 81 12 | 3.60 | |
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| 37826.0 | 54.810 22 | 335.7920 03 | 66.0153 03 | .008213 04 | .0893330 42 | 13.069988 00 | .442E-6 70 | 7.258083 | 83 12 | 5.59 | |
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| 37830.0 | 52.122 35 | 326.0925 03 | 66.0149 06 | .008196 06 | .0373448 97 | 13.069993 01 | .716E-6 56 | 7.258209 | 55 12 | 6.51 | |
| 37832.0 | 50.794 34 | 321.6420 04 | 66.0150 09 | .008183 04 | .0113469 93 | 13.069999 00 | .844E-6 57 | 7.258298 | 48 12 | 5.01 | |
| 37834.0 | 49.055 30 | 316.3999 12 | 66.0091 28 | .008196 26 | .085246 92 | 13.070002 01 | .69E-6 10 | 7.258189 | 35 12 | 5.81 | |
| 37836.0 | 49.004 42 | 311.5412 15 | 66.0106 30 | .008231 30 | .05911 12 | 13.070006 01 | .661E-6 81 | 7.257945 | 40 12 | 6.28 | |
| 37838.0 | 47.37 59 | 306.8914 18 | 66.0097 32 | .008206 32 | .03320 16 | 13.070011 01 | .164E-6 88 | 7.258115 | 44 12 | 6.79 | |
| 37840.0 | 46.440 66 | 301.0428 22 | 66.0106 33 | .008208 28 | .0711 18 | 13.070010 01 | -.190E-6 75 | 7.258111 | 43 12 | 7.40 | |

| T (MD) | w | Ω | 1 | e | M | n | n'/2 | q | N | D | c |
|-----------|------------|-------------|------------|------------|------------|--------------|-------------|----------|-------|------|---|
| 37522.0 | 266.43 35 | 352.9319 28 | 66.8119 35 | .007752 38 | .3845 10 | 13.868694 01 | .48E-6 16 | 7.261913 | 27 12 | 7.74 | |
| 37524.0 | 263.03 23 | 348.0809 19 | 66.8090 22 | .007766 32 | .12180 66 | 13.868692 01 | .148E-6 86 | 7.261956 | 35 12 | 7.30 | |
| 37526.0 | 261.47 45 | 343.2316 27 | 66.8088 27 | .007742 45 | .8596 13 | 13.868691 01 | .16E-6 16 | 7.261985 | 26 12 | 6.45 | |
| 37530.0 | 244.545 41 | 285.0583 03 | 66.8143 04 | .007841 06 | .70807 12 | 13.868707 01 | .419E-6 81 | 7.261254 | 60 12 | 7.00 | |
| 37532.0 | 243.067 44 | 280.2087 03 | 66.8135 05 | .007837 06 | .44567 12 | 13.868708 00 | .346E-6 63 | 7.261285 | 58 12 | 6.61 | |
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| 37540.0 | 237.552 40 | 260.8129 03 | 66.8132 04 | .007849 04 | .39496 11 | 13.868712 01 | .739E-6 79 | 7.261193 | 49 12 | 6.29 | |
| 37542.0 | 236.282 45 | 255.9644 03 | 66.8129 05 | .007840 05 | .13199 13 | 13.868714 00 | .738E-6 90 | 7.261260 | 34 12 | 5.74 | |
| 37544.0 | 234.733 38 | 251.1146 03 | 66.8139 05 | .007850 05 | .86980 11 | 13.868717 00 | .114E-6 59 | 7.261185 | 28 12 | 4.89 | |
| 37546.0 | 233.299 41 | 246.2655 03 | 66.8151 06 | .007854 06 | .60730 11 | 13.868714 01 | .122E-5 18 | 7.261158 | 20 12 | 4.69 | |
| 37548.0 | 231.843 88 | 241.4162 04 | 66.8155 07 | .007863 12 | .34484 24 | 13.868706 01 | .9E-7 10 | 7.261094 | 19 12 | 5.84 | |
| 37550.0 | 229.15 42 | 236.5641 13 | 66.8103 16 | .007829 14 | .858 12 | 13.868708 01 | .166E-5 23 | 7.261345 | 21 12 | 6.41 | |
| 37552.0 | 227.96 46 | 231.7157 16 | 66.8106 21 | .007848 14 | .8226 13 | 13.868708 01 | .112E-5 13 | 7.261199 | 23 12 | 7.70 | |
| 37606.0 | 204.653 98 | 149.2942 05 | 66.8125 08 | .007949 09 | .35757 27 | 13.868749 01 | .94E-6 13 | 7.260447 | 25 12 | 7.73 | |
| 37608.0 | 203.446 99 | 144.4452 05 | 66.8118 09 | .007970 07 | .09450 27 | 13.868755 01 | .131E-5 16 | 7.260295 | 28 12 | 7.98 | |
| 37610.0 | 202.020 53 | 139.5967 04 | 66.8117 07 | .007977 06 | .83203 15 | 13.868759 01 | .1018E-5 83 | 7.260242 | 30 12 | 6.41 | |
| 37612.0 | 200.713 58 | 134.7480 04 | 66.8115 07 | .007997 06 | .56925 16 | 13.868759 01 | .716E-6 71 | 7.260095 | 34 12 | 5.38 | |
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| 37616.0 | 197.824 77 | 125.0504 03 | 66.8141 07 | .007993 07 | .04446 22 | 13.868757 01 | .18E-6 14 | 7.260113 | 50 12 | 5.94 | |
| 37618.0 | 196.642 55 | 120.2021 03 | 66.8134 04 | .008020 05 | .78132 16 | 13.868754 00 | .1E-8 60 | 7.259925 | 55 12 | 5.02 | |
| 37620.0 | 195.281 40 | 115.3534 02 | 66.8135 03 | .008026 03 | .91869 11 | 13.868756 00 | .648E-6 59 | 7.259882 | 49 12 | 3.51 | |
| 37622.0 | 193.845 39 | 110.5048 02 | 66.8135 03 | .008029 03 | .25627 11 | 13.868756 00 | .339E-6 34 | 7.259864 | 51 12 | 3.42 | |
| 37624.0 | 192.377 43 | 105.6562 02 | 66.8136 03 | .008030 04 | .99395 12 | 13.868755 00 | .61E-7 53 | 7.259852 | 43 12 | 3.62 | |
| 37626.0 | 191.018 60 | 100.8075 03 | 66.8138 04 | .008036 05 | .73132 17 | 13.868754 01 | .50E-7 53 | 7.259807 | 34 12 | 4.35 | |
| 37628.0 | 189.632 99 | 95.9593 05 | 66.8139 06 | .008044 07 | .46876 28 | 13.868752 01 | .17E-6 14 | 7.259756 | 24 12 | 5.45 | |
| 37630.0 | 188.20 42 | 91.1039 33 | 66.8214 34 | .008076 80 | .2083 12 | 13.868752 01 | .180E-6 99 | 7.259516 | 23 12 | 5.37 | |
| 37632.0 | 186.83 41 | 86.2636 49 | 66.8161 46 | .008078 78 | .9438 12 | 13.868750 01 | .35E-6 11 | 7.259508 | 21 12 | 4.64 | |

| T (MD) | w | u | v | a | M | n | a'/2 | q | N | D | c | |
|-----------|---------|----|----------|----|----------|----|---------|----|---------|----|-----------|----|
| 37634.0 | 185.79 | 26 | 81.64140 | 32 | 46.0154 | 32 | .008149 | 32 | .68022 | 75 | 23.868751 | 01 |
| 37636.0 | 184.57 | 26 | 76.5686 | 28 | 46.0128 | 28 | .008172 | 43 | .41720 | 75 | 13.868753 | 00 |
| 37638.0 | 182.38 | 31 | 71.7246 | 28 | 46.01080 | 30 | .008047 | 41 | .15694 | 68 | 13.868751 | 01 |
| 37640.0 | 180.67 | 22 | 66.6746 | 16 | 46.0103 | 18 | .008009 | 27 | .89533 | 63 | 13.868750 | 01 |
| 37642.0 | 179.32 | 25 | 62.0239 | 16 | 46.0109 | 19 | .008023 | 29 | .63269 | 72 | 13.868751 | 00 |
| 37644.0 | 178.05 | 22 | 57.61764 | 15 | 46.0117 | 17 | .008040 | 25 | .36983 | 63 | 13.868752 | 00 |
| 37646.0 | 176.64 | 34 | 52.3275 | 18 | 46.0124 | 21 | .008042 | 35 | .0740 | 95 | 13.868750 | 01 |
| 37648.0 | 177.49 | 44 | 47.4789 | 18 | 46.0127 | 22 | .008059 | 45 | .8446 | 13 | 13.868749 | 01 |
| 37650.0 | 174.215 | 36 | 42.6310 | 13 | 46.0114 | 15 | .008083 | 05 | .58136 | 10 | 13.868749 | 01 |
| 37652.0 | 172.771 | 29 | 37.7829 | 13 | 46.0109 | 14 | .008098 | 04 | .319002 | 80 | 13.868748 | 00 |
| 37654.0 | 171.254 | 46 | 32.9262 | 11 | 46.0172 | 14 | .008105 | 08 | .05686 | 13 | 13.868746 | 01 |
| 37656.0 | 169.909 | 23 | 28.0786 | 05 | 46.0169 | 06 | .008093 | 06 | .794227 | 65 | 13.868746 | 01 |
| 37658.0 | 168.517 | 17 | 23.2305 | 03 | 46.0168 | 04 | .008095 | 05 | .531730 | 45 | 13.868747 | 01 |
| 37660.0 | 167.137 | 15 | 18.3822 | 03 | 46.0166 | 03 | .008100 | 04 | .269205 | 41 | 13.868746 | 00 |
| 37662.0 | 165.747 | 13 | 13.5339 | 02 | 46.0166 | 03 | .008098 | 04 | .006708 | 36 | 13.868743 | 00 |
| 37664.0 | 164.359 | 13 | 8.6895 | 02 | 46.0165 | 03 | .008106 | 03 | .704205 | 35 | 13.868742 | 00 |
| 37666.0 | 162.986 | 15 | 3.8372 | 02 | 46.0164 | 03 | .008115 | 04 | .481666 | 40 | 13.868743 | 00 |
| 37668.0 | 161.614 | 17 | 358.9889 | 02 | 46.0164 | 03 | .008125 | 04 | .219126 | 46 | 13.868741 | 00 |
| 37670.0 | 160.246 | 23 | 394.1406 | 03 | 46.0162 | 05 | .008135 | 05 | .956569 | 63 | 13.868718 | 01 |
| 37672.0 | 158.901 | 29 | 349.2915 | 03 | 46.0165 | 06 | .008147 | 05 | .693950 | 79 | 13.868735 | 01 |
| 37674.0 | 157.535 | 36 | 344.4431 | 06 | 46.0179 | 11 | .008153 | 07 | .431384 | 99 | 13.868738 | 01 |
| 37676.0 | 155.75 | 17 | 339.5951 | 16 | 46.0189 | 26 | .008224 | 34 | .16997 | 47 | 13.868741 | 01 |
| 37678.0 | 154.51 | 15 | 334.7467 | 13 | 46.0190 | 19 | .008196 | 33 | .90708 | 41 | 13.868744 | 01 |
| 37680.0 | 153.07 | 16 | 329.8978 | 13 | 46.0181 | 19 | .008214 | 36 | .64475 | 44 | 13.868741 | 01 |
| 37682.0 | 151.74 | 18 | 325.0498 | 15 | 46.0187 | 21 | .008206 | 41 | .38213 | 48 | 13.868738 | 01 |
| 37684.0 | 150.50 | 21 | 320.2020 | 19 | 46.0193 | 26 | .008174 | 50 | .11923 | 56 | 13.868734 | 01 |



| T (MJD) | w | Ω | i | e | M | n | n'/2 | q | N | D | σ |
|------------|------------|-------------|------------|------------|------------|---------------|-------------|----------|-------|------|---|
| 37706.0 | 135.522 49 | 266.8688 03 | 66.8135 03 | .008239 07 | .23126 13 | 13.8668701 01 | .59E-7 98 | 7.258346 | 56 12 | 6.33 | |
| 37708.0 | 134.143 37 | 262.0200 03 | 66.8136 04 | .008246 05 | .966878 10 | 13.8668701 00 | .267E-6 74 | 7.258291 | 56 12 | 6.39 | |
| 37710.0 | 132.808 35 | 257.1712 03 | 66.8135 04 | .008251 04 | .706179 96 | 13.8668702 00 | .95E-6 11 | 7.258255 | 55 12 | 6.26 | |
| 37712.0 | 131.465 25 | 252.3222 03 | 66.8132 04 | .008254 04 | .443610 70 | 13.8668704 01 | .273E-6 58 | 7.258230 | 55 12 | 6.10 | |
| 37714.0 | 130.122 27 | 247.6732 03 | 66.8121 04 | .008249 04 | .161045 75 | 13.8668703 00 | .334E-6 49 | 7.258271 | 43 12 | 5.93 | |
| 37716.0 | 128.822 28 | 242.6245 03 | 66.8121 04 | .008248 04 | .918360 78 | 13.8668704 00 | .326E-6 48 | 7.258276 | 48 12 | 5.84 | |
| 37718.0 | 127.477 23 | 237.7753 03 | 66.8123 04 | .008245 04 | .655808 65 | 13.8668704 00 | .190E-6 68 | 7.258301 | 64 12 | 5.43 | |
| 37720.0 | 126.206 32 | 232.9267 03 | 66.8120 05 | .008250 05 | .393042 91 | 13.8668700 01 | .159E-6 77 | 7.258264 | 72 12 | 6.88 | |
| 37722.0 | 124.832 31 | 228.0778 03 | 66.8121 04 | .008252 05 | .130568 87 | 13.8668700 01 | .286E-6 62 | 7.258250 | 91 12 | 7.32 | |
| 37724.0 | 123.552 38 | 223.2291 03 | 66.8123 04 | .008242 07 | .86783 11 | 13.8668702 00 | .949E-6 73 | 7.258324 | 89 12 | 7.18 | |
| 37726.0 | 122.220 40 | 218.3803 03 | 66.8125 05 | .008240 08 | .60525 11 | 13.8668706 01 | .910E-6 91 | 7.258332 | 61 12 | 7.60 | |
| 37728.0 | 120.892 37 | 213.5311 04 | 66.8123 05 | .008244 08 | .34267 10 | 13.8668708 01 | .148E-6 67 | 7.258303 | 65 12 | 6.62 | |
| 37730.0 | 119.521 50 | 208.6939 09 | 66.8143 12 | .008264 17 | .08021 14 | 13.8668701 01 | .36E-6 13 | 7.258160 | 46 12 | 7.70 | |
| 37732.0 | 118.194 70 | 203.8341 24 | 66.8131 28 | .008307 48 | .81763 19 | 13.8668703 01 | .17E-6 14 | 7.258243 | 35 12 | 7.97 | |
| 37754.0 | 102.65 42 | 150.4964 25 | 66.8246 31 | .008361 50 | .9319 12 | 13.8668756 01 | .9E-7 13 | 7.257429 | 25 12 | 6.98 | |
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| 37758.0 | 100.390 66 | 140.8016 06 | 66.8138 07 | .008285 18 | .40569 19 | 13.8668759 01 | .693E-6 93 | 7.257989 | 38 12 | 8.07 | |
| 37760.0 | 99.116 58 | 135.9536 04 | 66.8141 06 | .008284 16 | .14299 16 | 13.8668764 01 | .355E-6 87 | 7.257994 | 37 12 | 7.55 | |
| 37762.0 | 97.654 39 | 131.1099 04 | 66.8133 06 | .008318 08 | .888083 11 | 13.8668766 01 | .5E-7 10 | 7.257743 | 39 12 | 7.70 | |
| 37764.0 | 96.332 36 | 126.2614 04 | 66.8131 06 | .008315 07 | .61827 10 | 13.8668760 01 | -.4E-7 29 | 7.257770 | 36 12 | 7.00 | |
| 37766.0 | 95.000 35 | 121.4127 04 | 66.8120 07 | .008321 06 | .355735 98 | 13.8668759 01 | .14E-6 11 | 7.257724 | 36 12 | 7.17 | |
| 37768.0 | 93.641 35 | 116.5637 04 | 66.8106 06 | .008321 06 | .093273 97 | 13.8668760 01 | .87E-6 10 | 7.257726 | 33 12 | 6.30 | |
| 37770.0 | 92.295 40 | 111.7148 05 | 66.8112 07 | .008322 06 | .83078 11 | 13.8668765 01 | .110E-5 12 | 7.257717 | 30 12 | 6.87 | |
| 37772.0 | 90.929 23 | 106.8666 03 | 66.8126 04 | .008311 04 | .568358 62 | 13.8668774 00 | .855E-6 47 | 7.257794 | 37 12 | 6.68 | |
| 37774.0 | 89.572 18 | 102.0182 02 | 66.8134 03 | .008292 05 | .305926 48 | 13.8668773 00 | -.45E-6 10 | 7.257927 | 47 12 | 4.18 | |
| 37776.0 | 88.226 19 | 97.1697 03 | 66.8137 03 | .008291 05 | .043495 53 | 13.8668773 00 | -.335E-6 26 | 7.257936 | 55 12 | 4.74 | |
| 37778.0 | 86.842 22 | 92.3213 03 | 66.8139 03 | .008290 07 | .781083 61 | 13.8668771 00 | .210E-6 63 | 7.257948 | 49 12 | 5.20 | |
| 37780.0 | 85.501 21 | 87.4730 03 | 66.8141 04 | .008284 07 | .518598 59 | 13.8668773 01 | .667E-6 96 | 7.257990 | 48 12 | 5.15 | |

| T (KJD) | w | C | i | e | M | a | a'/2 | q | N | D | o |
|------------|-----------|----------|----|-------|----|------------|------------|--------------|-------------|----------|-------------|
| 37796.0 | 75.56 19 | 48.6795 | 28 | .8249 | 27 | .008046 47 | .41671 51 | 13.868797 01 | .0121E-5 56 | 7.259726 | 30 12 4.07 |
| 37798.0 | 74.020 22 | 43.8941 | 23 | .8218 | 23 | .008053 56 | .15432 59 | 13.868798 01 | .010E-7 89 | 7.259670 | 36 12 5.31 |
| 37800.0 | 72.009 10 | 38.9899 | 17 | .8162 | 18 | .008229 32 | .89393 27 | 13.868792 00 | -.724E-6 65 | 7.258384 | 45 12 5.19 |
| 37802.0 | 70.513 86 | 34.1742 | 12 | .8113 | 14 | .008290 31 | .63210 23 | 13.868789 01 | -.28E-7 71 | 7.257938 | 47 12 5.51 |
| 37804.0 | 69.018 34 | 29.2939 | 06 | .8172 | 08 | .008321 15 | .369776 91 | 13.868791 00 | .690E-6 38 | 7.257709 | 47 12 3.41 |
| 37806.0 | 67.797 42 | 24.4448 | 08 | .8182 | 12 | .008296 23 | .10727 11 | 13.868798 00 | .860E-6 55 | 7.257892 | 51 12 5.65 |
| 37808.0 | 66.434 39 | 19.5971 | 09 | .8110 | 13 | .008264 27 | .84490 10 | 13.868803 00 | .646E-6 78 | 7.258124 | 45 12 5.54 |
| 37810.0 | 65.079 36 | 14.7499 | 06 | .8137 | 13 | .008233 29 | .582504 98 | 13.868746 03 | .705E-6 78 | 7.258373 | 41 12 4.62 |
| 37812.0 | 63.846 29 | 9.9015 | 03 | .8129 | 07 | .008192 19 | .319783 78 | 13.868740 01 | .503E-6 43 | 7.258671 | 51 12 4.53 |
| 37814.0 | 62.538 20 | 5.0522 | 02 | .8141 | 04 | .008292 06 | .057229 56 | 13.868750 01 | .608E-6 42 | 7.257937 | 61 12 3.47 |
| 37816.0 | 61.185 27 | .2031 | 02 | .8139 | 04 | .008276 03 | .794842 77 | 13.868752 01 | .265E-6 55 | 7.258055 | 75 12 4.68 |
| 37818.0 | 59.891 33 | 335.3542 | 03 | .8142 | 04 | .008271 02 | .532290 93 | 13.868754 00 | -.300E-6 74 | 7.258089 | 83 12 5.61 |
| 37820.0 | 58.554 28 | 330.5049 | 02 | .8144 | 04 | .008262 02 | .269854 79 | 13.868750 00 | -.467E-6 85 | 7.258161 | 100 12 6.29 |
| 37822.0 | 57.208 23 | 345.6360 | 02 | .8144 | 03 | .008246 02 | .007436 64 | 13.868748 00 | .429E-6 60 | 7.258273 | 106 12 5.49 |
| 37824.0 | 55.834 28 | 340.8077 | 03 | .8142 | 04 | .008232 03 | .745097 77 | 13.868753 00 | .1421E-5 75 | 7.258379 | 91 12 6.20 |
| 37826.0 | 54.531 23 | 335.9593 | 03 | .8145 | 03 | .008223 04 | .482576 64 | 13.868764 00 | .607E-6 63 | 7.258439 | 71 12 4.78 |
| 37828.0 | 53.240 24 | 331.1106 | 04 | .8145 | 04 | .008205 06 | .220029 67 | 13.868765 00 | -.86E-6 12 | 7.258571 | 50 12 4.58 |
| 37830.0 | 51.936 37 | 326.2399 | 06 | .8142 | 07 | .008232 09 | .95751 10 | 13.868762 01 | -.72E-7 80 | 7.258376 | 41 12 6.06 |
| 37832.0 | 50.764 51 | 321.6112 | 04 | .8104 | 12 | .008206 06 | .69462 14 | 13.868762 01 | .283E-6 57 | 7.258563 | 27 12 4.52 |
| 37834.0 | 49.388 65 | 316.8395 | 08 | .8091 | 16 | .008227 07 | .43231 18 | 13.868766 00 | .50E-6 13 | 7.258412 | 25 12 2.81 |
| 37836.0 | 48.078 59 | 311.7108 | 10 | .8094 | 38 | .008262 39 | .1679 16 | 13.868770 01 | .68E-6 12 | 7.258149 | 29 12 5.36 |
| 37844.0 | 43.112 75 | 292.3169 | 39 | .8091 | 49 | .008198 14 | .1191 20 | 13.868771 01 | .14E-6 10 | 7.258620 | 34 12 6.54 |

NOTICE

This series of Special Reports was instituted under the supervision of Dr. F. L. Whipple, Director of the Astrophysical Observatory of the Smithsonian Institution, shortly after the launching of the first artificial earth satellite on October 4, 1957. Contributions come from the Staff of the Observatory. First issued to ensure the immediate dissemination of data for satellite tracking, the Reports have continued to provide a rapid distribution of catalogues of satellite observations, orbital information, and preliminary results of data analyses prior to formal publication in the appropriate journals.

Edited and produced under the supervision of Mr. E. N. Hayes and Mrs. Barbara J. Mello, the reports are indexed by the Science and Technology Division of the Library of Congress, and are regularly distributed to all institutions participating in the U. S. space research program and to individual scientists who request them from the Administrative Officer, Technical Information, Smithsonian Astrophysical Observatory, Cambridge, Massachusetts 02138.